FULL COLOUR THINKING

GRADUATE SCHOOL OF BUSINESS
UNIVERSITY OF CAPE TOWN

The Industrial Development Corporation's Distressed Funding: Effectiveness in rescuing distressed companies following the global financial crisis

A Thesis

presented to

The Graduate School of Business

University of Cape Town

In partial fulfilment

of the requirements for the

Master of Commerce in Development Finance Degree

by

Mamoekeng Matlaila

January 2015

Supervised by: Dr. Co-Pierre Georg

FULL COLOUR THINKING

PLAGIARISM DECLARATION

I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

I have used a recognised convention for citation and referencing. Each significant contribution and quotation from the works of other people has been attributed, cited and referenced.

I certify that this submission is my own work.

I have not allowed and will not allow anyone to copy this essay with the intention of passing it off as his or her own work

Mamoekeng Matlaila

ABSTRACT

The recent global financial crisis which began in the United States of America in 2007, spread to almost all economies in the world and evolved into a world economic downturn. Governments around the world introduced different rescue interventions to avoid the collapse of the financial and banking system and to stimulate economic growth. In addition to large scale economic stimulus packages, other forms of Government interventions were introduced in direct support of non-financial firms including Small and Medium Sized Enterprises (SMEs). These Government interventions have attracted little empirical attention with recent studies pointing out to the need for more evaluation of the impact of direct support interventions.

This study attempts to contribute to the literature which focuses on the impact of interventions introduced by governments in developing countries, to resolve market failure in non-financial corporate companies as well as SMEs. This study is focused on assessing the effectiveness of the IDC distressed funding scheme in rescuing distressed companies in South Africa following the recent global financial crisis.

We investigate the effects of the scheme on the financial performance of beneficiary companies. Our results show that overall the funding had a positive impact on beneficiary companies. The impact was greatest on the solvency, capital structure and leverage of the awarded companies. The funding was most effective in the first year following the injection of the capital into the business. The profitability and liquidity of the beneficiary company did not change significantly following accessing of the funding.

Keywords: Global financial crisis, government interventions, company financial performance, IDC distressed funding scheme

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

List of Figures

GLOSSARY OF TERMS

IDC Industrial Development Corporation

IFC International Finance Corporation

BNDES Brazilian National Bank for Economic and Social Development

GDP Gross Domestic Product

USA United States of America

EU European Union

SA South Africa

SME Small and Medium Sized Enterprises

TARP Troubled Asset Relief Program

ACKNOWLEDGEMENT

1 INTRODUCTION

1.1 Research Area and Problem

Prior to the global recession resulting from the financial crisis in 2007 to 2009, South Africa, a developing economy, had a healthy rate of economic growth, with real Gross Domestic Product (GDP) annual growth averaging 5.5 % during 2005 to 2007. At the height of the crisis, the annual GDP growth declined to -1.5 % in last quarter of 2008 and intensified in the first-half of 2009 (World Bank Group 2009).

The global financial crisis, which began with the banking crisis in the United States of America (USA) following the collapse of Bear Sterns and Lehman Brothers in 2008, resulted in liquidity drying up in the financial markets. This resulted in a credit crunch whereby firms were unable to access much needed funding and credit lines from traditional finance providers such as commercial banks. There was a market failure in the financial markets. In South Africa and across all world economies, the effects of the crisis were felt hardest by the small and medium sized companies (SME).

The definition of SME varies by country, or more specifically, by market size. Countries with large economies like the US and member states of the European Union (EU) use cut-off points of fewer than 500 workers to describe SMEs. In developing countries, where market size and average firm size are both much smaller, cut-off points of fewer than 100 workers or 250 workers are often used (Mosselman and Prince 2004).

In order to avoid job losses, stimulate economic growth and in an effort sustain distressed companies (including SME), the Industrial Development Corporation (IDC) in consultation with the Government of South Africa established a R6 billion special funding scheme called the “IDC distressed fund”: This funding intervention was aimed at granting much needed financial assistance to distressed companies in South Africa.

The distressed funding was established in late 2009, to counter the effect of the economic downturn spurred on by the global financial crisis. The objective of the fund was to act as a rescue vehicle for distressed companies which were profitable prior to the onset of the

recession and had been negatively impacted by the economic slowdown in South Africa. The distressed fund's objective was to maintain capacity and employment during the downturn in the economy (IDC Annual Report 2009). The IDC distressed fund was the largest rescue scheme introduced and the largest SME funding scheme in South Africa.

Although this intervention was the first of its kind in any African country, other developing countries such as had similar interventions. Brazilian National Bank for Economic and Social Development (BNDES) established the Investment Maintenance Program (PSI), to contain the drop in investments in the Brazilian economy that occurred to the financial crisis. The programme offered reduced interest rates and lengthened repayment periods and grace periods. By the end of 2010, disbursements related to the PSI totalled R$124.5 billion with more than half of which was earmarked for micro, small and medium-sized companies (BNDES annual report 2010). BNDES also introduced programmes to support companies working capital requirement in order to alleviate short term credit crunch.

In 2010, the Thailand government approved a number of programmes at state owned financial institutions aimed at assisting export-oriented SME affected by the appreciation of the Thai Baht. Export-Import Bank of Thailand (EXIM Thailand), a state-owned bank introduced a number of interventions to assist export-oriented SME by improving their liquidity and mitigating exchange rate risks.

In developed countries such as the US and Europe, central banks introduced interventions to improve liquidity in the financial services sector and stimulate economic growth. The troubled asset relief programme was introduced in 2008 in US to recapitalise the balance sheets of US banks, whilst the European Union governments introduced varying rescue packages in European countries.

Following the interventions introduced to rescue the financial and banking systems, most countries introduced economic stimulus packages aiming to revive economic growth. These economic stimulus packages became the most common policy tool for government intervention in many countries, including the US, the European Union (Ranga and Etzkowitz 2012).

In addition, most EU countries and the USA set up programmes to support SMEs and counter challenges they face particularly access to funding. Mata (2005) argues that State intervention in favour of SMEs is justified, on the grounds of both their significant contribution to economic growth and the greater problems they encounter, in comparison with big business, in obtaining funding. The aim of these programmes was to improve the competitiveness of SMEs and to encourage growth.

Rosenfeld (2007) found that in the United States of America, information asymmetry between borrower and lender is more pronounced when a firm is in financial distress. During such time there is more uncertainty regarding the firm's viability. Furthermore, firms facing distress require external funds to remain financially viable, so the firm is especially reliant on commercial banks for funding. Therefore, if the bank does not provide funding, the firm would have to tap into other sources of funding such as funding interventions similar to the IDC distressed fund.

In addition, the decline in availability of credit during economic downtowns was confirmed by the 'financial accelerator and flight to quality' study by Bernanke, Gertler and Gilchrist (1996). In their work, they found that during times of adverse shocks in the economy, financial conditions for firms and households worsen significantly and impair their ability to access credit at the time they need it the most.

Therefore IDC distressed fund was introduced to sustain and improve the financial performance of distressed companies which were profitable prior to the global financial crisis by extending credit lines, restructuring credit terms and providing guarantees (which were no longer available from traditional sources of finance). Distressed companies were invited to apply for funding under the distressed funding scheme and meet the set criteria.

Few empirical studies have been carried to measure the effectiveness of similar programmes on development. Therefore the purpose of this research study is to examine and investigate the effect the multibillion Rand IDC distressed funding scheme had an impact on improving financial performance and rescuing the distressed companies following the global financial crisis.

1.2 Research Objectives

The objective of this research is to assess whether or not the IDC distressed scheme was effective in supporting distressed companies and improving their performance following the global financial crisis. This study seeks to examine whether or not the distressed funding scheme was effective in improving financial performance as it relates to profitability, turnover growth, profitability, capital structure, and overall liquidity and solvency of beneficiary companies.

The effectiveness of the distressed fund will be measured using the following hypotheses:

- Funding received from IDC funding scheme improved financial performance (in respect of turnover growth, profitability as measured by earnings before interest and tax) of beneficiary companies.

- Beneficiary company's leverage and capital structure (as it relates to total debt to shareholders equity) improved following funding allocation, resulting in lower, more manageable levels of debt in relation to shareholders equity.

- Funding received improved liquidity of the beneficiary company (as measured improved liquidity ratio).

- Beneficiary company's solvency (as it relates to total asset to total liabilities) improved following funding allocation.

1.3 Research Questions and Scope

This research study thus poses the following research question:

What impact did the allocation of the funding from the distressed fund have on the financial performance of the beneficiary distressed companies?

Sub research questions:
Did distressed companies return to financial profitability as a result of fund allocation from the distressed fund?

Did capital structure and leverage of beneficiary companies improve following the allocation of funding from the distressed fund?

Did allocation of distress funding have an impact on the liquidity of the beneficiary company?

Did the solvency of the beneficiary company improve following the allocation of the distressed funding?

The Industrial Development Corporation ("IDC") is a self-financing, national development financial institution, wholly owned by the South African Government. The research study is limited only to beneficiary companies who accessed funding from the IDC distressed funding schemes and industry sectors funded by IDC in its ordinary course of business.

1.4 Research Assumptions

This study revolves around the analysis of annual financial statements of largely unlisted private companies who accessed funding from the IDC distressed funding scheme. Annual financial statements are inherently susceptible to the risk of manipulation. This study assumes that the annual financial statements used are a true and fair reflection of the company's performance and that there were no instances of manipulation.

This study also assumes that companies analysed were in distress because of the global financial crisis and subsequent economic downturn and not any internal factor such as management, marketing, internal control failures.

1.5 Research Ethics

The University of Cape Town, Graduate School of Business Ethical Clearance form was completed, signed and submitted as part of the completion of this research study

This study is qualitative in nature and used secondary data from annual financial statements. Permission has been granted by IDC Executive Management representative for the researcher to collect the data from the IDC database(s) and conduct the study. The data

collection was conducted in an ethical manner and confidentiality of information was respected.

2 LITERATURE REVIEW

2.1 Introduction

Chapter 1 introduced and defined this study's research objectives which aim to address the research problem. The objective of this chapter is to review the relevant academic literature related to the research questions. The review will include the analyses of a) market failure that prevailed during the global financial crisis, b) interventions that have been implemented globally to address to market failures similar to the global financial crisis, c) previous studies measurement of effectiveness and success of interventions d) financial indicators used to measure company financial performance. The review also analyses how previous studies have measured the effectiveness of interventions.

a) Market failure prevailing during the global financial crisis

The global financial crisis which began in 2007 in the financial services in the United States as a result of the property bubble and sub-prime mortgage is considered a market failure. During this period, there was a combination of asymmetrical information, incomplete and imperfect markets and lags in adjustments of markets. There were adverse shocks in the market which resulted in a drastic decline in credit available for companies in the global economy. There was limited liquidity and the global economy experienced a downturn and ultimately a recession. There was excess demand for credit lines and not enough supply from financial intermediaries. Tirole (2012) indicated that market freezes are one of the most damaging market failures.

Unlike most financial crises in the 20th century, the recent crisis was not limited to one part of the world. Due to the advancement of financial liberalisation and final deepening, the crisis affected almost all economies globally, albeit at different extents. Claessens, Dell'Ariccia, Igan and Laeven (2010) also confirmed that financial liberalization of credit markets amplified the impact of the recent crisis and thus reduced the financial system's ability to insulate the economies from financial shocks.

At the onset of the crisis, financial institutions in the United States of America began facing problems in raising capital in the financial markets and started limiting the supply

side of credit as they were also facing liquidity challenges. The economic downturn and slowdown impacted all economies and resulted in financial institutions globally limiting credit availability to firms and households alike despite the increasing demand (Rochon and Rossi, 2010). Duchin, Ozbas and Sensory (2010) stated that this crisis is represented an unexplored negative shock to the supply of external finance for non- financial firms.

The conditions that were prevailing were not unique to the recent crisis as the decline in the availability of credit during an economic downtown was confirmed by the 'the financial accelerator and flight to quality study by Bernanke, Gertler and Gilchrist (1996). In their work, they found that during times of adverse shocks in the economy, financial conditions for firms and households worsen significantly and impair their ability to access credit at the time they need it the most. They conclude that borrowers facing relatively high agency costs in credit market will bear the brunt of economic downturns (flight to quality) and that reduced spending, production and investment by these borrowers with high agency costs will exacerbate the effects of recessionary shocks.

Akerlof (1970) first introduced the flight to quality principle in his work on quality and uncertainty. He found that when borrowers have more information than lenders, there is information asymmetry in the market. The borrower has more information about their quality i.e. credit worthiness than the lender. Therefore lenders can make a rational decision not to extend credit to borrowers because it is difficult to distinguish between good and bad borrowers. Akerlof (1970) referred to this as market for lemon, in which lenders are not able to verify the quality of the borrowers and this leads to a market break down and credit rationing.

Stiglitz and Weiss (1981) further supported the asymmetric information theory when they found that unequal information between the borrower and lender poses a problem which can disrupt the flow of credit from lenders to profitable companies (i.e. borrowers) and result in credit rationing. They found that even if lenders (i.e. banks and other financial institutions/intermediaries) may increase the loan rate, by charging higher interest rates, this could still attract risky borrowers and result in adverse selection. Adverse selection is a situation where the borrower has more information about their quality. Bernande and Gertler (1989) also confirmed the cyclicality in supply of credit, when borrowers are unable to access credit if agency and information problems are significant.

Myers and Majluf (1984) further added to the information asymmetry and market of lemons theory when they found that financial managers of firms wishing to issue securities or equity often have more information about their firms and the asset portfolios, which the potential investors do not have. Because financial managers have no incentive to disclose any concerns in their asset portfolio, potential investors concerned that only problematic firms would be willing to issue shares, refuse to participate at a price providing "normal" economic returns (Peek and Rosengren, 1995).

Phillipon and Skreta (2012) found that in a market with information asymmetry, inefficiencies occur because the safest borrowers, facing unfairly high interest rates, drop out of the market. Competitive lenders then rationally charge a high rate to the remaining borrowers; lending and investment are inefficiently low. Lenders start limiting the supply of credit to firms in order to avoid the risk of adverse selection, where credit is extended to less than desirable borrowers.

It has been argued and there is general consensus that at the core of the recent global financial crisis was a banking crisis in the United States of America. This was highlighted or confirmed by the collapse of Bear Sterns in 2007 and subsequent collapse of Lehman Brothers in September 2008 followed by major challenges in the banking sector. The banking sector crisis became a systemic crisis which impacted all sectors of the economy in the USA, (Rochon and Rossi, 2010).

There is a wide body of literature about how shocks in the banking sector adversely affect other firms in the economy who look to banks for credit lines. Banking sector shocks limit the supply of credit to other firms in the economy. The recent crisis is further evidence of the unexplored negative shock to the supply of external finance for non - financial firms (Duchin et al. 2010). With the advanced financial liberalisation in the financial markets, the interconnectedness of financial markets, these supply side shocks are no longer limited to one economy in a certain part of the world; instead they tend to spread to other economies across the world. This was the case in the recent financial crisis.

Peek and Rosengren (1997) proved the Japanese stock market decline in the nineties, led to the contraction in the Japanese bank lending and a reduction in credit availability. Globalization resulted in the supply shock being transmitted to the US where Japanese banks' lending operations in the US reduced lending to US firms. Kang and Stulz (2000) also showed the link between banking shocks and performance of borrowing firms, when Japanese banks had to limit the supply of credit in the 1990s, firms who were dependent on bank borrowing performed worse off that firms who were less dependent on banks.

Ivashina and Scharfstein (2010) supported the view that shocks to bank capital affect the supply of bank loans if agency and information problems limit the ability of banks to raise additional capital. These shocks result in the cyclicality of supply of business credit as was the case in the recent financial crisis.

In all market failures over the years, it has been argued that smaller borrowers with weak collateral suffer the most. There is widely documented literature about the challenges around funding availability for companies during market failures. There is also evidence of obstacles faced by smaller firms in accessing finance during crisis periods with smaller firms being denied new loans when compared to larger firms during financial crises. Hallberg (2000) presented evidence that in the crisis period in the 1990s in Latin America and East Asia, smaller firms faced more obstacles in accessing new finance.

Biggs (2002) found that market failures create problems for SMEs in accessing financial markets. In support of this claim, Batra and Mahmood (2003) reported that there is evidence that the burden of market failures falls disproportionately on SMEs. Ardic, Mylenko and Saltane (2012) stated that access to finance is a significant obstacle for SMEs during crisis periods and that historically, SMEs have been more likely than larger firms to be denied new loans during financial crises.

Holstrom and Tirole (1997) also confirmed that during a credit crunch, the smaller, poorly capitalized firms with little or weak collateral are hardest hit by the credit crunches as larger firms are less affected as they can renegotiate their loans. A healthy banking relationship which results from repeated lending allows firms to negotiate their loans as repeated lending provides banks with information on the conditions of a firm that is otherwise unobservable and reduces information asymmetry (Cole 1997).

Banking relationships became increasingly important in lending decisions by banks during the crisis. In support of this, Hernandez - Canovas and Martinez - Solano (2007), using firm-level data from Spain, argue that close relationships with financial institutions may generate advantages such as improved conditions of financing and increased credit availability.

Duchin et al. (2010) in their work on understanding how shocks to the supply of external capital affects the real economy, show that during the recent crisis, firms with more collateral were better able to withstand the contractions in credit as a result of the shocks to external supply of funds as they could rely on internally generated funds. Thus firms with more collateral are able to navigate better during a credit crunch period.

Although many authors believe the lack of external funding is a constraint to growth, especially in smaller firms Becchetti and Trovato (2002). Some authors like Watson (2006) argue that firm growth is linked to firm profitability and therefore to the availability of internally generated funds. Therefore contractions in the supply side of credit are not to blame for contraction in growth of firms.

Regardless of whether or not the contractions to the supply side were responsible for the stagnant or no growth in firms and the economies during the crisis, one thing was clear. There were market failures which policy makers around the world could not ignore. Steps had to be taken to address the market failures that were prevalent in the market, and stimulate economic activity.

b) Interventions introduced following the financial crisis

There is widely documented literature about the challenges around funding availability for firms during market failures such as those described in the previous section. Holstrom and Tirole (1997) show the need for public intervention in the financial markets in managing liquidity during a credit crunch. They argue that private intermediaries are not able to provide to provide liquidity to firms in difficult times and that firms with the lowest collateral suffer the most. Culpeper (2012) argues that market failures necessitate government intervention. Tirole (2012) concludes that governments intervene in an attempt

to improve liquidity in the market, to overcome adverse selection and restore market functioning.

There are two schools of thought when it comes to interventions in the financial markets. On the one hand, the neoclassical view advocates for financial liberalization policies and therefore supports minimal or non-intervention. On the other hand the Keynesian model justifies wide ranging state intervention in financial markets, more so in crisis periods.

The premise for minimal intervention is based on the Laissez-faire economic market or free market theory. In financial markets, this is linked to the efficient market hypothesis which assumes that financial markets are efficient and if left alone they will allocate resources equally across all market participants.

Many economics argue that the Neoclassical view that market are efficient, self-adjusting and can return to equilibrium if left alone was disproven during the recent crisis and all the previous crises in the 1990s where interventions had to be introduced. Rochon and Rocci (2010) argue that financial markets are, in fact, destabilizing and chaotic by nature, which can only be reconciled with the self-adjusting properties neoclassical economists claim they have with great difficulty, if at all.

Keynesian economists believe that increased government interventions during the recent crisis were more in line with Keynes principles. Rochon and Rocci (2010) further believe that neoclassical economic theories have failed and were in disarray during the recent crisis.

It has been argued that rise of a finance-dominated economy resulted in profound changes in the way economies operated. The increased financialization contributed to the decoupling of finance from production as the world moved away from a Keynesian production economy to financial capitalism, in which the role of banks in particular changed. The bank – firm relationship was replaced with a bank – financial market relationship (Rochon and Rocci 2010).

In line with the modern day finance-dominated economies, Culpeper (2012) believes that finance has certain aspects of a public good such as defence or police service and should

be treated more like a utility which should be closely regulated and supervised. He argues that government has a central role to play in ensuring that financial sector works to support the smooth functioning and growth of the economy as a whole. He further argues that private financial markets may provide too much credit that it causes inflation little credit that it leads to deflation or to volatile swings between inflation and deflation. Therefore this provides a rationale for government intervention to prevent such outcomes.

On the other hand, some authors argue against the interventions stating that government intervention in the financial sector creates moral hazard on the part of financial institution when they know that government is likely to intervene. Tirole (2012) states that the prospect of a government intervention always reduces the incentives to create high-quality assets in the financial market. In their work on efficient recapitalization, Phillipon and Schnabl (2012) argue that government interventions generate ex ante moral hazard that may increase the ex post cost of government interventions.

In addition, government interventions may have unintended consequences. Tirole (2012) gives an anecdotal example of a case where the government might want to rescue banks because they have small depositors or because they are central to the credit and payment systems. But it may not necessarily want the rescue efforts to benefit hedge funds (which are unregulated and therefore can enter into riskier financial transactions). Yet if assets can be traded between hedge funds and banks, banks are willing to purchase dubious assets from hedge funds if they anticipate that a government's asset repurchase scheme will be set up.

Furthermore, government intervention in the provision of finance is thought to be too prone to cronyism or political capture and, even where these problems do not exist, there would be the fiscal cost of providing subsidies or covering the losses of state-owned financial institutions, which can be significant. The view is that government intervention could stunt financial development and economic growth (Culpeper 2012).

Despite the views against government interventions in financial markets, there is a history of interventionist policies during banking crises in the past. It is well known fact that during the Great depression in the US there was some government assistance to the US banks in the early 1900s.

Calomoris and Mason (2003) in their analysis of Asian crisis stated that there is always potential abuse of government assistance to banks. They state that during the Asian crisis in Asia, as elsewhere, banks have been used as tools as a primary means of channelling favours to influential parties or so-called crony capitalism. Crony capitalists will appeal for bank assistance on the basis of the "capital crunch" motive, while in fact hoping to channel government assistance for banks into their own coffers (Calomoris and Mason 2013).

Nonetheless, during the recent crisis central banks around the world adopted measures to improve liquidity, restore investor confidence and avoid a global credit crunch (Jawadi, Arouri and Nguyen 2010). Governments across the world initiated a number of fiscal measures aimed at stimulating their economies (Rochon and Rocci 2010).

Gorton and Huang (2004) stated that the government can bail out banks in distress because it can provide liquidity more effectively than private investors can. Tirole (2012) found that public interventions can overcome adverse selection and improve the liquidity in the market and thus restore market functioning.

Most of the literature on interventions during market failures in the economy is mainly related to government initiated interventions, mostly in the banking industry of the financial services sector. During the recent financial crisis, central banks in developed countries mainly in Europe and the US introduced interventions aimed at banks in their respective countries in order to maintain the integrity of their financial services sector and their economies.as banks are viewed as the backbone of the economy. Peek and Rosengren (1995) noted that problems in the banking sector can extend to the rest of the economy as banks provide a service that is not easily provided by alternative financial intermediaries.

The interventions introduced in the banking sector in the recent crisis included equity injections and debt guarantees. This was similar to Japanese government interventions introduced in the banking sector to stabilise the economy and boast economic growth in the Japanese and Asian Crisis in the 1990s and during the great depression in the US in the 1930s.

Although there is widely published literature about the different intervention programmes introduced during the different economic and currency crises in the 1990s, there are mixed views on whether or not some of the interventions have been effective and efficient. During the recent global financial crisis, government interventions were introduced to capitalise the banking industry, i.e. improve the bank capital crunch, as this was expected to solve the credit crunch problem. The largest and most notable of the banking sector intervention was the 700 billion US Dollar Troubled Asset Relief Programme ("TARP") in United States of America, which was introduced after the collapse of Lehman Brothers.

Recent empirical work on the financial crisis documents the decline in bank lending Ivashina and Scharfstein (2010). Peek and Rosengren (1995), Valencia (2008) and Laeven and Valencia (2013), documented how negative bank capital shock caused a capital crunch which led to disruptions on the supply side of credit. Calomoris and Mason (2013) argue that bank finance is seen as crucial to the process of capital allocation, particularly for investment by SMEs for which there are no alternative sources of funding.

Smaller firms can be a key source of recovery from recession. Since most local banks specialize in financing SME businesses, where most information is private rather than public; where knowledge of the industry, management skills, and local conditions may be critical to the determination of credit-worthiness. Due to this asymmetry in information, most SME find banks as the only source of debt finance, Peek and Rosengren (1995).

Therefore in addition to the bailout packages at a US Federal and EU government level to the banking sector, EU Member States offered state aid under different programmes to SMEs affected by the crisis, in an effort to correct the market failure at the SME/firm level. The state aid was seen as a solution to the funding difficulties SME (Romero-Martinez, Ortiz and Soriano 2010). In the US, dedicated SME programmes and grant funding were seen as important during the crisis as many argue that SMEs make special contributions to economic development and poverty alleviation e.g. job creation (Batra and Mahmood 2003).

In the developing country context i.e. 'countries in a transitional phase between developing and developed' Patanachaka (2012), there were no major bailouts of financial institutions. This is mainly because financial institutions did not have exposure to sub-prime mortgage

assets which were at the centre of the crisis. Culpeper (2012) stated that most of the developing world experienced a less intensive crisis as the financial sector was far less sophisticated compared to developed countries and was therefore less vulnerable to breakdown.

Others believe that in developing countries such as South Africa, where the financial institutions are subjected to conservative financial regulation and risk management practices, the local financial institutions did not have direct exposure to structured finance products such as the sub-prime assets.

The impact of the financial crisis in small open developing economies with trade linkages and countries heavily reliant on exports (similar to South Africa) suffered from the decline in international trade and difficulty in financing trade Claessens et al. (2010). The authors argue that although the financial sector did not suffer due to exposure to subprime assets, there was a decline in domestic economic activity. Lack of external funding to firms and households caused by negative shocks to banks were prevalent in developing economies.

Therefore instead of interventions aimed at banks in the financial sector, most developed countries had to come up with schemes to stimulate economic activity at a firm level to address the credit availability, save jobs and improve economic. In Brazil, India and South Africa (developing countries and members of the Brazil, Russia, India, China, South Africa (BRICS) trade blocks), Thailand and Mexico, government owned national development banks introduced interventions to address the credit crunch at the firm level in their respective economies in order to improve economic conditions.

National Development Bank are defined as Financial institutions set up (by the government) to foster economic development, often taking into account objectives of social development and regional integration, mainly by providing long-term financing to, or facilitating the financing of, projects generating positive externalities (Smallridge and de Olloqui 2011). The rationale for intervention through development bank is based on governments playing a direct role in the financial sector. During the recent financial crisis, the national development banks in developing countries intervened in the market to play a counter-cyclical role of stimulating demand for financing in sectors that will contribute to

economic development or catalyse supply of credit, where intermediaries had withdrawn supply temporarily (de Olloqui 2013).

This form of intervention was a form of direct SMEs support which is in line with what Culpeper (2012) stated that in the post crisis world, governments should support SMEs by direct provision of financial services through national development banks and directed credit programmes.

In Brazil, the Brazilian National Bank for Economic and Social Development (BNDES), a national development bank established the Investment Maintenance Program (PSI), to contain the drop in investments in the Brazilian economy that occurred in the fourth quarter of 2008 due to the financial crisis. The programme offered reduced interest rates and lengthened repayment periods and grace periods. This resulted in a significant decrease in the financial cost for credit lines, such as those for acquiring capital goods, innovation and the Financing Program for Truck Drivers. The lower interest rates were equalized by the Brazilian National Treasury. By the end of 2010, disbursements related to the PSI totalled R$124.5 billion with more than half of which was earmarked for micro, small and medium-sized companies (MSMEs) (BNDES 2010).

In South Africa, the government negotiated with business, organised labour and community in February 2009 for a framework for South Africa's response to the international economic crisis. They committed, inter alia, to support for distressed sectors in the economy. The IDC, as a national development bank was identified as a key agency to execute this commitment. The IDC introduced the IDC distressed funding scheme in 2008 and allocated R6.1 billion over 2010 and 2011 financial years. The IDC deliberately chose to limit its intervention in these cases to businesses that showed signs of success prior to the crisis so as not to expend resources on a broad range of uncompetitive businesses (IDC 2010). The funding was to be used for working capital purposes, expenses, guarantee facilities to guarantee existing limits, suspensive sale facility, loan to finance capital expenditure, equity where the company is undercapitalized.

In 2010, the Thailand government approved in a number of interventions by the state-owned Export-Import Bank of Thailand (EXIM Thailand), Small and Medium Enterprise Development Bank of Thailand, Islamic Bank of Thailand and the Krung Thai Bank to assist export-oriented SME affected by the appreciation of the Thai Baht. EXIM Thailand assisted SMEs providing foreign exchange forward purchase/sales contract service, packing credit facility (export credit), and financing facility for liquidity enhancement for SMEs. (EXIM Thailand 2010). The interventions were aimed at improving SME liquidity and mitigating exchange rate risks

In Mexico, at the height of the crisis in 2008, Nacional Financiera Banca de Desarrollo (NAFIN) the Mexican Development bank, provided support to businesses impacted by the global of financial crisis and foreign exchange volatility by significantly intensified its credit, guarantees, productive chains (factoring), and training and technical assistance programs. (NAFIN 2008). The factoring programme enabled small suppliers to use their receivables from large credit worthy buyers as collateral in exchange for working capital financing from NAFIN.

c) **Measurement of effectiveness and success of interventions**

The argument as to whether or not interventions introduced to address market failures are effective and successful is the heart of this study. This study aims to determine whether or not the intervention introduced to corporate company in distress in the South African economy by the IDC had an impact in rescuing distressed firms.

Although various interventions have been initiated by governments across the world, few empirical studies have been carried to measure the effectiveness or success of such programmes. There is also limited consensus on the correct way of measuring effectiveness of interventions. To my knowledge, the effectiveness of direct intervention at a corporate company level in emerging markets, particularly in South Africa has not been studied yet.

In respect of interventions introduced during the recent global financial crisis to stabilise the banking sector in various countries, a few studies have been performed to assess the effectiveness of the interventions in the developed countries. Phillipon and Skreta (2009) assessed the cost efficiency of the government interventions in market that collapse due to adverse selection. Their study based on banks in the United States of America, found that debt guarantees are the cheapest way to maximize new lending and that the optimal intervention can be achieved by a menu of equity injections if debt guarantees induce excessive risk taking.

Jawadi et al (2010) investigated the efficiency of central bank intervention to improve liquidity within the current global financial crisis and investigated financial markets in the United Kingdom, United States of America and France. Their finding are show strong effects from interest rate changes on stock markets indicating that investors take into account central bank intervention policies to make their trading decisions.

Gaby and Walker (2011) tested the impact of TARP on the solvency of largest banks in United States of America shortly after the TARP capital injection. The study found that the TARP programme restored some confidence in the US financial system. Phillipon and Schnabl (2013) analysed government interventions to recapitalize a banking sector that restricts lending to firms because of debt overhang. They found that efficient recapitalization is profitable if the benefits of lower aggregate credit risk exceed the cost of implicit transfers to bank debt holders.

Despite the studies carried out on the impact of interventions on the banking sector during financial crises, very limited studies have been carried out to assess the impact of direct interventions at a firm level, more especially in a developing country context. Laeven and Valencia (2013) in their empirical study assessed the importance of supply-side credit market frictions by examining the impact of bank recapitalization on firm growth in 50 countries during the recent crisis. In their study, the crisis was seen as a shock to the credit supply and they measured firms' dependence on external financing with policy interventions aimed at restoring bank capital. Their findings indicate that growth of financially dependent firms is disproportionately positively affected by bank recapitalization.

In the same vein as the intention of this study, are the various impact studies performed at a firm level such as assessment studies performed on various SME assistance programmes aimed at addressing market failures such as access to external funding. In a study by the IFC investigating the economic rationale for intervention in support of SMEs, Hallberg (2000) argues that the justification for SME interventions lies in market and institutional failures that bias the size distribution of firms, rather than on any inherent economic benefits provided by small firms. Hallberg (2000) opined that attempts to measure the impact of interventions on SME performance are infrequently done and are plagued by measurement and methodological problems. Therefore the effectiveness of the state-driven programmes in addressing the SME challenges has been questioned.

Although there is some evidence that some of the SME assistance programs have alleviated credit constraints, there are also unsuccessful experiments, and the impact of many of these interventions has not been properly evaluated.

Culpeper (2012) states that recent studies have highlighted the need for more evaluation of the impact of policy interventions designed to expand SME finance and resolve market failures. This view further supports the intention of the study in measuring the effectiveness of the IDC distressed funding scheme in rescuing distressed companies, including SMEs.

From the body of literature on measuring effectiveness of intervention programmes, the central theme is the importance of defining what effectiveness is. In loose terms, measuring effectiveness of any state intervention involves identifying whether and to what extent, the intervention achieved its goal of reducing the targeted market failure.

Mosselman and Prince (2004) define effectiveness as a term commonly used to refer to the goal-attainment of a measure, thus relating the outcome of a process to its original goals. Therefore the effectiveness of a state intervention scheme relates the outcomes or effect compared to the goals, a state intervention is said to be effective if the goals are reached, i.e. if the outcomes match the goals. Therefore the evaluation of the effectiveness of state aid should identify whether, and to what extent, the state scheme has been able to reduce the targeted market failure. Thus in effectively measuring outcomes of any state led intervention; we need to compare the results of the outcome to the original goal.

In support of this view, Storey (2000), states that the evaluation of effectiveness is impossible unless objectives are clear and measurable. Some studies carried out to measure effectiveness are discussed below.

Lerner (1999) in his study on measuring the impact of a federal government intervention examined the Small Business Innovation Research (SBIR) program, which has provided over US$7 billion to small high-technology firms between 1983 and 1997 in the United States of America. He examined the employment and sales growth of beneficiary firms over a 10 year period using an Ordinary Least Square (OLS) regression analysis. His findings show that firms who were awarded funds from the program grew significantly faster than matched firms (who did not get awarded funds) over the 10 year period.

In Brazil, Ottaviano and de Sousa (2007) investigated the impact of BNDES loans on Brazilian firms' productivity based on long term loans provided by the Brazilian government through BNDES as credit constraints for long-term projects are considered among the most important market failures in the Brazilian economy. In their work, the BNDES loans were considered as a potential solution to remove credit constraints facing firms. The study investigated the impact of BNDES loans on the productivity of Brazilian manufacturing firms, with amongst other things, larger revenues, larger profits and lower fixed costs being proxies for increased firm productivity. The paper utilised a regression analysis methods to measure the impact of the BNDES loans on date from 1995 to 2003 (an 8 year period). They found that on average awarded firms performed better than non – awarded firms. The study found that impact of the BNDES loans appears in the data with a three-year lag, with the effects different between small and large projects being negative for small projects and positive for large projects (Ottaviano and de Sousa 2007).

In Sri- Lanka, Aivazian and Santor (2008) carried out a study which examined the investment behaviour of a sample of small, credit constrained firms in Sri Lanka. The study using panel data set, compared two groups of small firms, one group of small firms had access to subsidised loans from the World Bank group, whilst the other group of firms did not have access to the subsidized loans. The paper used regression analysis to measure the impact on the small firms change in performance following the introduction of the subsidised loans. The paper finds that the World Bank Loan Subsidy Program led to a

relaxation of credit constraints and higher levels of investment for firms that received the subsidies.

Afrane (2008) performed an impact assessment study on the performance of microfinance projects in Ghana supporting SMEs in the trading, manufacturing, services, food industry, and agricultural sectors. The study analysed the nature and degree of impact of the credit scheme designed to promote positive transformation in the economic, social, spiritual, and political lives of beneficiaries and their communities. Qualitative and quantitative methods were used to analyse the data from a sample of 129 businesses. The results show that the injection of capital into the enterprises had positive impacts on all indicators with the turnover of the businesses increasing after the disbursement of the loans.

Since the goal of the IDC distressed funding scheme was to support distressed companies that were successful prior to the financial crisis. In analysing the intervention's effectiveness, the financial performance of the beneficiary companies after accessing the intervention should be compared to their performance just before accessing the intervention. The intervention was limited to businesses that showed were successful prior to the global crisis; therefore deteriorating financial performance could be directly correlated to the financial crisis.

This study contributes to the body of literature that focuses on the impact of interventions introduced by governments to resolve market failure in corporate companies and SMEs following the global financial crisis.

d) **Financial indicators used to measure company financial performance**

There is a wide ranging body of literature documenting the most effective tools in assessing the financial performance of a company. Almost all authors agree that the information to assess financial performance of a company is contained in the annual financial statements of the company. Financial statement ratios were considered to be a good indicator of financial health or corporate performance as previous studies have confirmed the value of financial ratio analysis

Beaver (1966) in his empirical study on financial ratios as a predictor of failure, defined a financial ratio as a quotient of two numbers, where both numbers consist of financial statement items. He found that financial ratios are predictors of important events in a company, failure being just one of the important events. He used a univariate discriminant analysis to show how effective financial ratio sets can be useful when constructing company default prediction models.

In his study, Beaver (1966) used a list of thirty financial ratios grouped under six groups i.e. cash flow ratios, net income ratios, total assets ratios, liquid asset total assets ratios, liquid assets to current debt ratios and turnover ratios. In the end he found the one ratio out of each of the six groups to be more meaningful to use in his analysis. The useful ratios were: cash flow to total debt, net income to total assets, total debt to total assets, working capital to total assets, current assets to current liabilities and no credit interval. The six ratios were selected on the basis of the lowest percentage error for their group.

Altman (1968) in his empirical study on financial statement ratios, discriminant analysis and predictability of failure, found that financial ratio analysis is meaningful in determining a firms financial health. He was first to attempt an assessment of the quality of ratio analysis as an analytical technique to predict bankruptcy. He used ratio analysis as a technique for investigating corporate performance. He stated that in general ratios measuring profitability, liquidity, and solvency prevailed as the most significant indicators.

He used an initial list of twenty two potentially meaningful financial statement ratios. He narrowed down the list of ratios to the following five ratios: working capital to total assets, retained earnings to total assets, earnings before interest and tax to total assets, market value equity to book value of total debts and sales to total assets. He classified these ratios under five categories: liquidity, profitability, leverage, solvency and activity ratio.

Blum (1974) in his study called the failing company doctrine, constructed a model that was to be used to predict failure and also as a defence in antitrust cases under the failing company doctrine in the United States of America. He used discriminant analysis in his model and his model differed in that most of the variables incorporate change over time and includes variability of accounting data. Blum's model framework was centred around liquidity, profitability and variability. He selected the following financial ratios to measure

liquidity current assets (less inventory) to current liabilities, current assets (less inventory) to inventory. Cash flow to total liabilities, net worth at book and market value to total liabilities. To measure profitability he assessed the rate of return to common stockholders who investee for a minimum of three years. For variability he looks at standard deviation, trend breaks, slope of net income over time.

Although the studies by Beaver (1966), Altman (1968) and Blum (1974) were ground breaking, they were based on large businesses and not on smaller business failures. In his study called an empirical test of financial ratio analysis for small business failure, Edmister (1972) examined nineteen financial ratios and five methods of analysis. He used multiple discriminant analysis techniques as introduced by Altman in 1968. Edmister's study differed from the Beaver (1967) and Altman (1968) study in that it focused on small business failure whilst the other studies were focused on large businesses. The ratios selected to measure failure included, current, inventory/net working capital, total assets, total debt, equity cash flow current liabilities, inventory/sales, earnings before taxes The study results also confirmed the value of ratio analysis.

Richardson, Kane and Lobingier (1998) in their work considered the impact of a recession on the failure prediction models defined a recessions represent a cyclical phenomenon characterized by short periods of sharply reduced business activity often and coincide with periods of monetary and fiscal constraint. The reduced sales and increasing costs associated with such periods combine to cause reduced profitability or even loss for many businesses and industries. In their model which takes into account the effect of a recession they used the following ratios variables: current assets to total assets, current assets to current liabilities, cash to total assets and current assets to sales.

Based on the usefulness and quality of financial ratios in measuring financial performance of companies in corporate failure prediction models, we conclude that financial ratios can be just as effective in measuring improvement in financial performance of companies. Although other authors argue that financial statements and therefore financial statement ratios are susceptible to manipulation by management, the evolution of the International financial reporting standards and the advancement of the auditing profession have gone a

long way in minimising instances of manipulation and improving validity of financial statements to the different users.

Altman (1968) found that failing firms exhibit significantly different ratio measurements than continuing entities. Therefore in measuring improvement of beneficiary firm's financial performance, and thus the effectiveness of the IDC distressed funding, this study will use financial ratios and compare a selected set of ratios two years prior to the distressed funding, presumably when the company is at the highest stage of financial distress, to that of two years after the funding. We expect the financial ratio measurement to be different.

Therefore in this study financial statement ratios will be used as a measurement tool in assessing the financial performance of companies. The appropriate set of financial ratios was based on the prevalence of the financial ratios in previous studies involving financial ratio analysis. Similar to the study performed by Beaver in 1967, this study is restricted to testing existing financial ratios rather than developing new ones.

3 RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter presented an overview of literature which covers interventions introduced by government to address market failures. The literature was centred around a) market failures that prevailed during the global financial crisis b) **interventions that have been implemented historically to address to market failures** similar to the global financial crisis and c) previous studies on **evaluation of effectiveness and efficiency of interventions**

In this chapter, the methodology applied in conducting the research on effectiveness of interventions will be discussed. The chapter starts in Section 3.2 by stating the research objectives as introduced in Chapter 1 of the study. This is then followed by a discussion on the different research traditions in Section 3.3.

Next the research approach adopted is outlined in Section 3.4, followed by the research design chosen in section 3.5 to section 3.9. The research limitations as well as ethical considerations are discussed in Section 3.10. Lastly, Section 3.11 provides the conclusion of the chapter.

3.2 Research Objective

As mentioned in chapter 1 of the study, the objective of the research study is to assess whether or not the IDC distressed fund scheme was effective in supporting distressed companies and improving their financial performance following the global financial crisis.

In addressing the research problem, the most appropriate research method has to be selected to answer the research questions stated in chapter 1.

3.3 Research Traditions

There is a wide body of literature that discusses philosophical views which make up the foundations of social science research and inform the way in which research studies are undertaken. Creswell (2010) argues that the research approach adopted by researcher to study any topic is informed by philosophical assumption that the researcher has. He refers

to these assumptions or views as philosophical worldview assumptions. Other authors such as Guba et al (2011) refer to these assumptions as paradigms whilst Crotty (1998) called them ontologies and epistemologies.

In my view the best summary of research philosophies is provided by Neuman (2011). He distinguishes between two types of philosophical foundations namely, ontological and epistemological assumptions. Ontology is defined as fundamental nature of reality, or what exists. It investigates the reality or what already exists. The two basic positions under this philosophical foundation are realist and nominalists.

Realists believe that the world is organised in pre-existing categories waiting to be discovered, realists believe that "what you see, is what you get'' Neuman (2011). Nominalists on the other hand believe that our subjective or cultural believes influence how we see the world and informs our reality.

Epistemology in any study describes how researcher gain knowledge about what they know. Crotty (1998) describes epistemology as the theoretical lens that or stance that he researcher might use in the research study. Whilst Neuman (2011) describes epistemology methods researchers take as the most valid ways to reach the truth.

There are three distinct epistemological views described as follows:

- Positivist social science – this approach aims to discover natural laws so people can predict and control events.
- Interpretive social science – approach is to understand and describe meaningful social action.
- Critical social science – approach is centered around debunk myths and empowering people to change society

All the three approaches mean that what a researcher views to accomplish when doing research will vary with the approach taken (Neuman 2011). The characteristics of the three approaches are described in table 3.1 below:

Table 3.1: Comparison of Three Social Science Research Views

Point for comparison		Positivism social science	Interpretive social science	Critical Social Science
1.	Reason for research	To discover natural laws so that people can predict and control events	To understand and describe meaningful social action	To smash myths and empower people to change society radically
2.	Nature of social reality	Stable pre-existing patterns or order that can be discovered	Fluid definitions of a situation created by human interaction	Conflict filled and governed by hidden underlying structures
3.	Human nature	Self-interested and rational individuals who are shaped by external forces	Social beings who create meaning and who constantly make sense of their words	Creative, adaptive people with unrealised potential, trapped by illusion and exploitation
4.	Role of common sense	Clearly distinct from and less valid than science	Powerful everyday theories used by ordinary people	False beliefs that hide power and objective conditions
5.	Theory looks like	A logical deductive system of interconnected definitions, axioms and laws	A description of how a group's meaning system is generated and sustained	A critique that reveals true conditions and helps people see the way to a better world
6.	An explanation that is true	Is logically connected to laws and based on facts	Resonates or feels right to those who are being studied	Supplies people with tools needed to change the world
7.	Good evidence	Is based in precise observations that others can repeat	Is in embedded in the context of fluid social interactions	Is informed by a theory that unveils illusions
8.	Place for values	Science is value free and values have no place except when choosing a topic	Values are an integral part of social life; no group's values are wrong, only different	All science must be begin with a value position; some positions are right, some are wrong

Table 3.1 Source: Researcher's own version adapted from Neuman, (2003)

The research problem presented in chapter 1 lends itself to the use of positive social science.

3.4 Research Approach and Strategy

The nature of the research questions/hypotheses lends itself to use of deductive approach. Sunders, Lewis and Thornhill (2009) describe deductive approach as a study in which the research develops a theory and hypothesis at the beginning of the study and design a strategy to test the hypothesis. Babbie (2013) explains deductive reasoning as moving from a pattern that might be logically or theoretically expected to observations that test whether the expected pattern actually occurs.

Given that this study proposes to test whether access to the IDC distressed funding scheme resulted in improving financial performance of beneficiary companies, it begins with a premise or hypothesis that can logically be tested to arrive at a conclusion. The research type is an explanatory research which Zikmund (2009) describes as research conducted to identify cause and affect relationships among variables where the research problem has already been narrowly defined. The study is more of a positivist social science as it seeks to understand logically connected variables based on precise observations (Neuman 2011).

Quantitative research method approach has been selected in conducting the research mainly given the nature of the data that can be tested in solving the research question. In addition positivist social science lends itself to use of language of variable and hypothesis Neuman (2011). Due to the nature of the problem, my study will investigate two or more variables and analyse existing stats or secondary data. This will be the most effective way of analysing the data when compared to qualitative methods. Table 3.2 below contains a high level comparison between quantitative and qualitative research methods:

Table 3.2: Comparison between Quantitative and Qualitative Research Methods

Point for comparison		Quantitative	Qualitative
1.	What is the purpose of the research	To explain and predict To confirm and validate To test theory	To describe and explain To explore and interpret To build theory
2.	What is the nature of the research process?	Focused Known variables Established guidelines Predetermined methods Somewhat context-free Detached view	Holistic unknown variables Flexible guidelines Emergent methods Context bound Personal view
3.	What are the data like, and how are they collected?	Numeric date Representative, large sample Standardized instruments	Textual and /or image-based data Informative, small sample Loosely structured or non-standardized observations and interviews
4.	How are data analysed to determine their meaning?	Statistical analysis Stress on objectivity Deductive reasoning	Search for themes and categories Acknowledgement that analysis is subjective and potentially biased Inductive reasoning
5.	How are findings communicated?	Numbers Statistics aggregated data Formal voice, scientific style	Words Narratives, individual; quoted Personal voice, literary style

Table 3.2 Source: Leedy (2009)

3.5 Research Design

Zikmund (2009) defines research design as a master plan specifying the methods and procedures for collecting and analysing all the information needed i.e. a framework for the research plan of action.

3.6 Data Collection

Secondary data in the form of annual financial statements (i.e. income statement and balance sheet) of beneficiary companies will be collected analysed. For all beneficiary companies selected in the sample, annual financial statement information for two years preceding the intervention i.e. two years before accessing the IDC distressed funding and two years after accessing the intervention will be collected.

The annual financial statements of beneficiary companies of the scheme will be obtained from IDC's information system database(s) namely Docupedia, SAP and Risk Analyst where all the information about all IDC clients are stored. The focus will mainly be on the financial statements and credit committee application approvals for funding. This is because most of IDC clients are privately held SMEs; the financial statement information is not publicly available and cannot be obtained from any other source except from IDC archive records.

Information regarding the beneficiary companies industry sector, geographical location, amount approved will be retrieved from IDC information system database(s) SAP system and Docupedia.

The beneficiary company should have been in operation before the crisis i.e. before 2007, during the crisis i.e. between 2008 and 2010 and beyond. The limitation of the data collection might be instances where beneficiary companies might have failed to provide the financial statement to the IDC post the granting of the distressed funding as the financial statements of the said beneficiary company cannot be obtained anywhere else but from the client as almost all of the beneficiary companies are private companies not listed on any stock exchange platforms or any public directories.

3.7 Sampling Strategy

Zikmund (1997) defines the process of sampling as a procedure using a small number of items or parts of the whole population to make conclusions regarding the whole populations. A sample is a subset of a larger population

As the study was limited to all beneficiary companies who have accessed the IDC distressed funding between the years 2009 until 2012, in answering the research question, it was possible to collect data from most of the population of 162 companies across all industry sectors funded by the IDC. Refer to table 3.2.below for a list of all funding sectors at IDC.

Table 3.3: IDC Industry Sectors

Categories	Sectors
1	Agriculture and agro-processing
2	Basic metals
3	Chemicals, rubber, plastics and non-metallic minerals
4	Fabricated metals
5	Forestry, wood, pulp and paper
6	Machinery and equipment
7	Mining
8	Media and Motion Pictures
9	Motor vehicles, parts and accessories
10	Textiles and clothing
11	Transport and logistics
12	Tourism
13	Other

Table 3.3 Source: Researcher's own

However, Sanders et al. (2009) point out that one should not assume that collecting data from entire population would necessarily provide more useful results than collecting data from a sample which represents the entire population. In support of sampling, Zikmund (2011) argues that properly selected samples are sufficiently accurate in most cases.

There are probability sampling and non-probability sampling techniques. Non-probability sampling which is described by Leedy (2009) as a situation where the researcher has no way of forecasting or guaranteeing that each element of the population will be represented in the sample. Babbie (2013) defines probability sampling as samples selected in accordance with probability theory, typically involving some random selection mechanism. Therefore the sample selection in any research study is dependent on the population size and the population characteristics.

This study intended to test the entire population of beneficiary companies of the IDC distressed funding scheme as the population size was not too large. However the initial population search revealed that some beneficiary company, namely those in the textiles and clothing sector, received other government interventions offered by the South African Government and the IDC, in addition/conjunction to the IDC distressed funding scheme, during the period sampled. These other interventions were designed specifically to keep companies operational following an influx of cheap imports from China. Consequently all the companies in the textile and clothing sector, a total of 28 beneficiary companies were excluded from the population to be tested.

In addition to the textiles companies, a total of 25 beneficiary companies had to be excluded as they accessed the distressed funding in 2013, therefore they couldn't be included in the testing as enough time had not lapsed to allow for the measuring the effect of the funding on the financial performance. Lastly, 54 beneficiary companies were excluded as they failed to submit annual financial statements to the IDC after distressed funding was granted or they went into liquidation/ceased operating within a year after granting of funding.

Therefore in this study non probability sampling techniques were employed as some level of judgement was used in selecting a sample from the entire population.

3.8 Data Analysis Methods

The research study will use quantitative methods to test the hypothesis stated in Chapter one. Given the nature of the research questions and the need to test the same data i.e. the financial statement ratios over different time period, non parametric tests incorporating the Friedman and the Wilcoxon Signed Rank tests will be used to analyse the data.

In order to assess and measure the financial performance of beneficiary companies, financial ratios based on the beneficiary company financial statement have been selected as a measurement tool as discussed in the previous chapter. Financial ratios were considered to be a good indicator of financial health or corporate performance as previous studies have confirmed the value of financial ratio analysis.

Selecting the appropriate set of measurement tools was of fundamental importance, therefore this study focused on financial ratios that measured profitability, liquidity, solvency, capital structure and leverage. The combined results from the above categories were considered in assessing the performance of the beneficiary company. The combined results will measure whether the beneficiary company financial performance improved or deteriorated following the accessing of the IDC distressed funding.

The appropriate set of financial ratios was based on the prevalence of the financial ratios in previous studies involving financial ratio analysis. Similar to the study performed by Beaver in 1966, this study is restricted to testing existing financial ratios rather than developing new ones.

In contrast to the expected weakening of financial ratios observed in corporate failure prediction models, the financial ratios for beneficiary companies were expected to improve over time as a sign of recovery from financial distress.

Therefore the focus on the income statement was profitability as it relates to turnover or sales and earnings before interest and tax (EBIT). Watson (2005) found that profitability is the most significant determinant of firm growth. Therefore if the firm is growing, it will be an indication that it is trading itself out of distress.

With regards to the balance sheet, the focus was on liquidity, solvency, leverage and capital structure variables. Liquidity is defined as the ability of a company to meet all its obligations as they fall due in the short term (reference). Whilst solvency is the ability of a firm to meet all its obligations as and when they fall due, in the medium to long term. Liquidity and the presence of adequate financing opportunities have been theorised to be crucial elements in firm survival Richardson et al (1998). Beaver (1967) described the solvency of the firm in terms of the probability that liquid assets will be exhausted and therefore the firm will be unable to pay its obligations as they mature.

Leverage is a measure of the amount of the amount of debt financing in a firm (Realy Meyer and Marcus 2012). Leverage relates to how much of the funding of the company is from external debt or borrowings as opposed to shareholders equity contribution together with internally generated funds. Capital structure refers to the split between debt and equity financing a firm. It is a measure used to determine the financial health of the company or how the company's operations are financed. It is concerned with the mix of long term debt and equity financing (Realy et al. 2012).

Therefore balance sheet items such as current assets, current liabilities, total assets, cash, total liabilities as well total shareholders' equity will be analysed. These variables will be used to determine the liquidity, solvency, leverage and capital structure of the beneficiary

company pre and post the intervention, i.e. IDC distressed funding. Table 3.4 below lists all the financial ratios that will be tested over the four time periods.

Table 3.4 List of Financial Ratios tested

Number	Financial Ratio	Category
1	Earnings Before Interest and Tax / Sales	Profitability
2	Earnings Before Interest and Tax / Total Assets	Profitability
3	Sales / Total assets	Profitability
4	(Current Assets - Current Liabilities) / Sales	Liquidity
5	(Current assets - Current Liabilities) / Total Assets	Liquidity
6	Current assets / Current Liabilities	Liquidity
7	Cash / Current Liabilities	Liquidity
8	Current liabilities / Total Assets	Liquidity
9	Total Liabilities / Total Equity	Leverage and Capital Structure
10	Total Liabilities / Total Assets	Solvency
11	Equity / Total Debt	Leverage

Table 3.4 Source: Researcher's own

Following the collection of the financial statement data for the beneficiary companies for all four time periods, the data was organised under the variables listed in Table 3.4 and then checked for errors.

A full descriptive statistical analysis was conducted on data under all variables. Descriptive statistics involves methods of organizing, summarising and presenting a set of data in a way that useful information is produced (Keller 2012). Values such as the mean, median, standard deviation, mode, minimum and maximum were calculated for each variable. Descriptive statistics results will allow for ease of comparison between all the variables.

Normality Test

The first test performed on data for each variable over all four time periods was a test for normality. Normal is described as a symmetrical, bell-shaped curve, which has the greatest frequency of scores in the middle, with smaller frequencies towards the extremes (Pallant 2007). The normality test is an initial data analysis step which tests the distribution of each of the variable. Based on the results of the normality test we were able to determine whether or not the variables were normally distributed.

There are several tests available to determine whether a sample comes from a normally distributed population (Drezner, Turel and Zerom 2010). In performing the normality test for this study, the Kolmogorov - Smirnov and Shapiro - Wilk W tests were employed. The selected tests for normality fall under the theory based category of normality tests (Park 2008).

The Kolmogorov-Smirnov test (KS) is one of the most well-known tests for normality. In its original form, the KS test is used to decide whether a sample comes from a population with a completely specified continuous distribution. (Drezner et al. 2010).

The Shapiro - Wilk W test for normality is a test designed to detect all departures from normality. The Shapiro-Wilk W test is said to be one of the best omnibus measure to test the univariate normality hypothesis (Thode 2002). Whilst other authors found that the Shapiro-Wilk W test is the most powerful test for normality.

The Kolmogorov-Smirnov test was utilised for variable where the sample size was more than 50 as it fairs better for larger samples and the Shapiro Wilk test W was utilised for variables where the sample size was less than 50 as it is biased by sample size. These two tests were expected to produce the most accurate results.

The objective of the study was to determine the effect of the IDC distressed funding intervention on the financial performance of beneficiary companies over the four time periods, i.e. two period pre intervention and two periods post intervention. Therefore the null hypothesis i.e. H0 for the normality test was the sampled variables are from a population that is normally distributed and therefore there is no difference in the variables over the four time periods. That is, there is no difference pre and post intervention on the financial performance of beneficiary companies.

The alternative null hypothesis i.e. H1 was that the variables in the sample are not from a normally distributed population. Therefore there is a different in the values or variables over the four time periods and thus a difference in pre and post intervention values and thus a difference in the financial performance of the beneficiary companies pre and post intervention values.

The statistical level of significance was set at the conventional level of 5% i.e. 0.05. Therefore the normality test rejects the hypothesis of normality when the p-value is less than or equal to 0.05. Failing the normality test allows us to state with 95% confidence that the data does not fit the normal distribution. Passing the normality test only allows you to state no significant departure from normality was found.

Therefore when the p-value is greater and equal to 0.05, we do not reject the null hypothesis. When the p-value is less than 0.05, then the null hypothesis is rejected and there is evidence that the data are not from a normally distributed population as reflected below:

H0: $p > 0.05$ Do not reject H0 (accept H0)

H1: $p < 0.05$ Reject H0 (accept H1)

Non Parametric Tests

Many of the tests in traditional statistics texts are based on samples that follow certain assumptions or parameters, these tests are known as parametric tests (Corder and Foreman 2014). Keller (2012) states that non parametric techniques test characteristics of populations without referring to specific parameters, for example rather than testing whether to determine whether the populations means differ, the test determines whether population locations differ. Non parametric tests do not have stringent requirements and do not make assumptions about the underlying population distribution (Pallant 2007).

Corder and Foreman (2014) states that parametric assumptions include samples that:

- are randomly drawn from a normally distributed populations
- are adequately large
- approximately resemble a normal distribution
- consist of independent observations
- Have respective populations of approximately equal variances
- Consist of values on an interval or ratios measurement scale

In order to use parametric tests, all the assumptions stated above have to be met.

In this study, the sample did not meet all the parametric test assumptions. Therefore, non parametric were selected as a method of analysing the data. In addition, the sample size was not too large, there were outliers in the data and initial normality test revealed that most variables were not normally distributed.

Comparison over Time

Following the normality test, the actual difference in the variables over the four time (two years pre and two years post the intervention) was analysed. The non parametric tests used to test the variables pre and post intervention were the Friedman Test followed by the The Wilcox signed rank test. Keller (2012) found that with data that is non normal, non parametric test lend themselves more accurate to use as t-tests and F tests would be invalid.

Friedman Test

The Friedman test is the non-parametric alternative to the one-way repeated measures analysis of variance. It is used when the same sample is measured at three or more point in time (Pallant 2007). Friedman's test is used as an alternative to the analysis of variance F-test and does not require that the distribution of responses be normal (St. Laurent and Turk 2012). In this study the same variables are measure over four time periods, the same sample is tested over different time periods, therefore the Friedman test was deemed appropriate for testing for statistically significant differences in the variable.

As part of the Friedman test, ranked means were calculated and used to determine the results. Ranked means are calculated by taking the normal mean and excluding outliers. Ranking the means for each time period is important for this non-parametric tests as the normal means could be influenced by outliers. When mean ranks are calculated, outliers cannot influence the ranks of the mean. Therefore mean ranks are a good proxy to use in the testing of whether or not there was a difference in the variables over the different time periods.

The significance level for the Friedman test is 5% or 0.05 with the following hypothesis:

H0: $p > 0.05$ There is no difference across the four time periods

H1: $p < 0.05$ There is a difference across four time periods

Post hoc Tests

The Wilcoxon Signed rank Test is designed for use with repeated measures, where subjects are measured on two occasions. It is the non parametric alternative to the repeated measures t - test and instead of comparing means the Wilcoxon converts scores to ranks and compares them to Time 1 and Time 2 (Pallant 2007).

In cases where the Friedman test establishes that there is a statistically significant difference over time in the variables, post hoc tests were performed involving individual Wilcoxon signed rank tests with a bonferroni adjustment to the alpha values (p values).

The Friedman test assumed a 95% confidence level and thus a 5% level of significance meaning that out of every 100 tests performed, 95% of the test performed will be correct and the other 5% could produce incorrect results. Therefore the more test performed, the more we increase the chances of arriving at biased results. Thus in cases where there are statistically significant differences from the Friedman tests, we will be performing more tests (i.e. post hoc tests) and thus increasing chances of obtaining biased results.

Therefore a bonferonni adjustment was included to Wilcoxon signed rank test to control for Type 1 errors. The objective of including bonferroni adjustment following the Friedman test, was to make the level of significance level stricter in order to control for Type 1 errors. A type 1 error is committed when we reject a true null hypothesis (Keller 2012).

The results of the normality test, Friedman test and the comparison of variables over the four time periods are discussed in detail in Chapter Four.

3.9 Research Reliability and Validity

Reliability and validity of result are said to be central concerns in all measurement as they both connect measured to constructs (Neuman 2011). These two ideas help to establish the truthfulness, credibility or believability of findings.

Reliability is the extent to which data collection techniques or analysis procedures will yield consistent findings Saunders et al (2009). Whilst validity is described by Babbie (2013) as a term describing a measure that accurately reflects the concept it is intended to measure.

This study is quantitative in nature and the data tested is financial statement information of beneficiary companies. Therefore the validity and reliability characteristics are likely observed in this study.

3.10 Research Limitations

The study is limited to the South African economy and as a result is not a true reflection of impact of government interventions within Africa. Furthermore, the study is based on a single funding scheme and thus generalisations concerning all government funding schemes and alternative funding scheme designs within the South African economy cannot be deduced.

Another limitation of the research is that the small sample size and information availability. The population was limited to companies which have accessed the IDC distressed funding scheme and the population did not exceed 200 companies. Furthermore financial statements from financial periods prior to the beneficiary company accessing distressed funding could be unavailable as the majority of IDC funded entities are not public companies and therefore their annual financial statements are not published on public domains. In cases where the beneficiary company did not have a funding relationship with IDC prior to accessing the distressed funding, financial statements would not be stored on IDC's database(s).

In some instances, companies that were selected in the sample failed to submit financial information to the IDC, this resulted in the selected company being excluded from testing.

Also, beneficiary companies which were involved in a merger following the accessing of the funding were also excluded from the sample of testing for this study. Therefore this study inherently exposed to sample selection bias.

Further limitations are the non-existent literature on similar studies performed in emerging countries and in South Africa. More research is required in determining the impact of direct support interventions to companies, especially in emerging market economies such as South Africa.

Another limitation was the research methodology applied to the study and the author's statistical skills.

4 RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

The previous chapter detailed the research methodology applied in answering the research questions focus on data collection and research tools as well as data analysis methods.

This chapter presents the results of the analysis performed for this study, based statistical tests detailed in Chapter three on methodology. The chapter is divided into 4 subsection. Section 4.1 begins with a summary of the descriptive statistics results. In Section 4.2 the results of the normality test on each variable are presented. This is then followed by Section 4.3 where the results from the Friedman test comparison over time are presented. In Section 4.4, the results of the Wilcox Signed test are presented. Lastly, in Section 4.5 the conclusion is provided.

4.1 Descriptive Statistics

Table 4.1 Industry Sector Descriptive Statistics Analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Agro	3	5,7	5,7	5,7
Basic Metals and Fabricated Metals	4	7,5	7,5	13,2
Chemicals	10	18,9	18,9	32,1
Forestry	4	7,5	7,5	39,6
Motor Vehicles, Parts and Accessories Including Machinery and Equipment	19	35,8	35,8	75,5
Media	6	11,3	11,3	86,8
Construction	1	1,9	1,9	88,7
Tourism and Transport	5	9,4	9,4	98,1
Mining	1	1,9	1,9	100,0
Total	53	100,0	100,0	

Table 4.1 Source: Researcher's own

Table 4.1 shows the industry sectors of the beneficiary companies in the samples. There were 53 beneficiary companies in the sample with the majority (35.8%) in the motor, vehicle, parts and accessories including machinery and equipment. This sector is generally known as the metals sector and was one of the hardest hit by the financial crisis due to volatile steel prices, lower than anticipates export levels and the strengthening of the rand. Therefore we expected that most beneficiary companies of the distressed funding intervention were from this sector. The second highest sector was Chemicals at 18.9%

followed by the Media sector at 11.3%. Both sectors were also impacted by the general slowdown in the economy.

Table 4.2 Regional Descriptive Statistics Analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
Gauteng	21	39,6	39,6	39,6
Mpumalanga	3	5,7	5,7	45,3
Western Cape	12	22,6	22,6	67,9
Eastern Cape	8	15,1	15,1	83,0
KwaZulu Natal	7	13,2	13,2	96,2
Limpopo	1	1,9	1,9	98,1
North West	1	1,9	1,9	100,0
Total	53	100,0	100,0	

Table 4.2 Source: Researcher's own

Table 4.2 presents the regional split of the sample. The province with the highest beneficiary companies is Gauteng at 39.6%. Incidentally most of the metals, chemicals and media sector companies are based in the Gauteng province. The second highest province is the Western Cape at 22.6% following by Eastern Cape at 15.1%, both of these province have a higher than average prevalence of metals and chemical sector clients.

Table 4.3, 4.4 and 4.5 below present the summary statistics including mean, median and standard deviation of all variables used in the study. Table 4.3 presents all the profitability variables, Table 4.4 presents all the liquidity variables, whilst Table 4.5 presents the solvency and leverage variables

Table 4.3: Profitability Summary Statistics

	N		Mean	Median	Mode	Std. Deviation
	Valid	Missing				
EBITS_L2 Earnings Before Interest and Tax / Sales (2 Years Before Intervention)	50	3	-1,1003522	0,0028843	-47.08657[a]	6,69717597
EBITS_L1 Earnings Before Interest and Tax / Sales (1 Year Before Intervention)	53	0	-0,5333279	-0,030348	-0,73652	2,49300465
EBITS_1 Earnings Before Interest and Tax / Sales (1 Year After Intervention)	53	0	-0,3612344	0,0028782	-0,37691	1,70238844
EBITS_2 Earnings Before Interest and Tax / Sales (2 Years After Intervention)	42	11	-0,1677160	0,0048263	-6.17187[a]	0,96164304
EBITTA_L2 Earnings Before Interest and Tax / Total Assets (2 Years Before Intervention)	50	3	-0,0078247	0,0069523	-0.72939[a]	0,19796108
EBITTA_L1 Earnings Before Interest and Tax / Total Assets (1 Year Before Intervention)	53	0	-0,1129240	-0,046696	-0,15086	0,37373055
EBITTA_1 Earnings Before Interest and Tax / Total Assets (1 Year After Intervention)	53	0	-0,0703814	0,0067628	-0,43285	0,22576599
EBITTA_2 Earnings Before Interest and Tax / Total Assets (2 Years After Intervention)	42	11	-0,0590374	0,0073569	-1.50795[a]	0,30192906
STA_L2 Sales / Total assets (2 Years Before Intervention)	50	3	1,5371765	1,3133300	0.00497[a]	1,02376238
STA_L1 Sales / Total assets (1 Year Before Intervention)	53	0	1,5063405	1,3699954	0,204828	1,11235229
STA_1 Sales / Total assets (1 Year After Intervention)	53	0	1,6085629	1,3126365	1,148406	1,59997139
STA_2 Sales / Total assets (2 Years After Intervention)	42	11	1,5576101	1,3679902	0.01373[a]	1,03602003

Table 4.3 Source: Researcher's own

From the variables presented above, as was expected, most of the Earnings before interest and tax ratios were negative in the L2 which represents results for two years pre intervention and L1 which represents two years post the intervention. Ratios show a general upward trend in years following the intervention.

Table 4.4: Liquidity Summary Statistics

	N		Mean	Median	Mode	Std. Deviation
	Valid	Missing				
CACLS_L2 (Current Assets - Current Liabilities) / Sales (2 Years Before Intervention)	50	3	0,6867228	-0,008815	-3.67783[a]	4,77728036
CACLS_L1 (Current Assets - Current Liabilities) / Sales (1 Year Before Intervention)	53	0	0,9180529	-0,049887	0,1176	6,93460527
CACLS_1 (Current Assets - Current Liabilities) / Sales (1 Year After Intervention)	53	0	0,3440224	-0,015819	0,202672	4,37161357
CACLS_2 (Current Assets - Current Liabilities) / Sales (2 Years After Intervention)	42	11	0,3418133	-0,049009	-1.25920[a]	2,36911034
CACLTA_L2 (Current Assets - Current Liabilities) / Total Assets (2 Years Before Intervention)	52	1	-0,0290999	-,0119099	-0,00584	0,21046118
CACLTA_L1 (Current Assets - Current Liabilities) / Total Assets (1 Year Before Intervention)	53	0	-0,0802167	-,0766899	0,024088	0,27615829
CACLTA_1 (Current Assets - Current Liabilities) / Total Assets (1 Year After Intervention)	53	0	-0,1657421	-,0161640	0,23275	0,47078369
CACLTA_2 (Current Assets - Current Liabilities) / Total Assets (2 Years After Intervention)	42	11	-0,1162905	-,0641880	-1.65966[a]	0,65766936
CACL_L2 Current Assets / Current Liabilities (2 Years Before Intervention)	52	1	1,1460431	0,9460550	0,807018	0,84153952
CACL_L1 Current Assets / Current Liabilities (1 Year Before Intervention)	53	0	35,1064818	0,8003895	1,147693	248,38470452
CACL_1 Current Assets / Current Liabilities (1 Year After Intervention)	53	0	1,3094081	0,9570011	1,906369	1,63824489
CACL_2 Current Assets / Current Liabilities (2 Years After Intervention)	42	11	2,9423350	0,8947169	0.07120[a]	10,24286419
CCL_L2 Cash / Current Liabilities (2 Years Before Intervention)	38	15	0,1862930	0,0503540	0,046784	0,41588578
CCL_L1 Cash / Current Liabilities (1 Year Before Intervention)	38	15	0,2766322	0,0549572	0,078991	1,30049636
CCL_1 Cash / Current Liabilities (1 Year After Intervention)	46	7	0,1638649	0,0442231	0,168887	0,26874453
CCL_2 Cash / Current Liabilities (2 Years After Intervention)	36	17	0,5130961	0,0402187	0.00044[a]	1,67619790
CLTA_L2 Current Liabilities / Total Assets (2 Years Before Intervention)	52	1	0,4159370	0,4032539	0,030271	0,19837164
CLTA_L1 Current Liabilities / Total Assets (1 Year Before Intervention)	53	0	0,5196271	0,4435527	0,163094	0,45596835
CLTA_1 Current Liabilities / Total Assets (1 Year After Intervention)	53	0	0,5790729	0,4613072	0,256794	0,44188316
CLTA_2 Current Liabilities / Total Assets (2 Years After Intervention)	42	11	0,6993637	0,4564362	0,00332[a]	0,86535976

Table 4.4 Source: Researcher's own

In the liquidity variables presented in Table 4.4 above, the median values pre and post intervention are very close in value. With the exception of a few outliers, the majority standard deviation of the variable is close to the mean.

Table 4.5: Solvency and Leverage Summary Statistics

	N		Mean	Median	Mode	Std. Deviation
	Valid	Missing				
TLTE_L2 Total Liabilities / Total Equity (2 Years Before Intervention)	52	1	-9,9366989	1,6929722	-0,29208	69,16600412
TLTE_L1 Total Liabilities / Total Equity (1 Year Before Intervention)	53	0	30,6320360	2,2119879	-2,40556	175,14415993
TLTE_1 Total Liabilities / Total Equity (1 Year After Intervention)	53	0	0,9219353	-1,3019230	-1,91216	121,85235955
TLTE_2 Total Liabilities / Total Equity (2 Years After Intervention)	42	11	22,3976809	0,4591356	-216.45357	175,62873699
TLTA_L2 Total Liabilities / Total Assets (2 Years Before Intervention)	52	1	0,8345078	0,8114257	0,036555	0,35633722
TLTA_L1 Total Liabilities / Total Assets (1 Year Before Intervention)	53	0	1,0656163	0,8905918	0,814875	0,93577275
TLTA_1 Total Liabilities / Total Assets (1 Year After Intervention)	53	0	1,1515830	0,9404295	2,096298	0,74805514
TLTA_2 Total Liabilities / Total Assets (2 Years After Intervention)	42	11	1,4293498	0,9935750	0.21979	1,30317870
ETD_L2 Total Equity / Total Debt (2 Years Before Intervention)	52	1	0,1072272	0,2027117	-3,42373	0,81023892
ETD_L1 Total Equity / Total Debt (1 Year Before Intervention)	53	0	0,1464129	0,1005199	-0,4157	0,45218243
ETD_1 Total Equity / Total Debt (1 Year After Intervention)	53	0	-0,0165117	-0,0164535	-0,52297	0,76902225
ETD_2 Total Equity / Total Debt (2 Years After Intervention)	42	11	0,1009226	0,0229514	-0.81440[a]	0,73772480

Table 4.5 Source: Researcher's own

In respect of the solvency variable TLTA, presented in Table 4.5 there is no significant difference in the mean and he standard deviation pre and post intervention. With regards the leverage variable, i.e. TLTE standard deviation is significantly different from the mean pre and post intervention, a sign that there may be outliers in the data. In addition the mean and median values are also not similar, meaning the variable does not have the same central tendency

Normality Test

The objective of the normality test is to assess whether the data are from a normally distributed population in order to establish whether or not there is a difference over time pre and post intervention.

In performing the test, the Kolmogorov - Smirnov test (sample size exceeding 50) and Shapiro - Wilk W test (sample size less than 50) were used in testing the variables depending on the sample size as described in Section 3.8 in Chapter three. The profitability, liquidity, solvency and leverage variables presented in table 4.2, 4.3 and 4.4 were all tested with the results presented below:

Normality Test Results

As stated in section 3.8 the null and alternative hypotheses for the normality test were as follows:

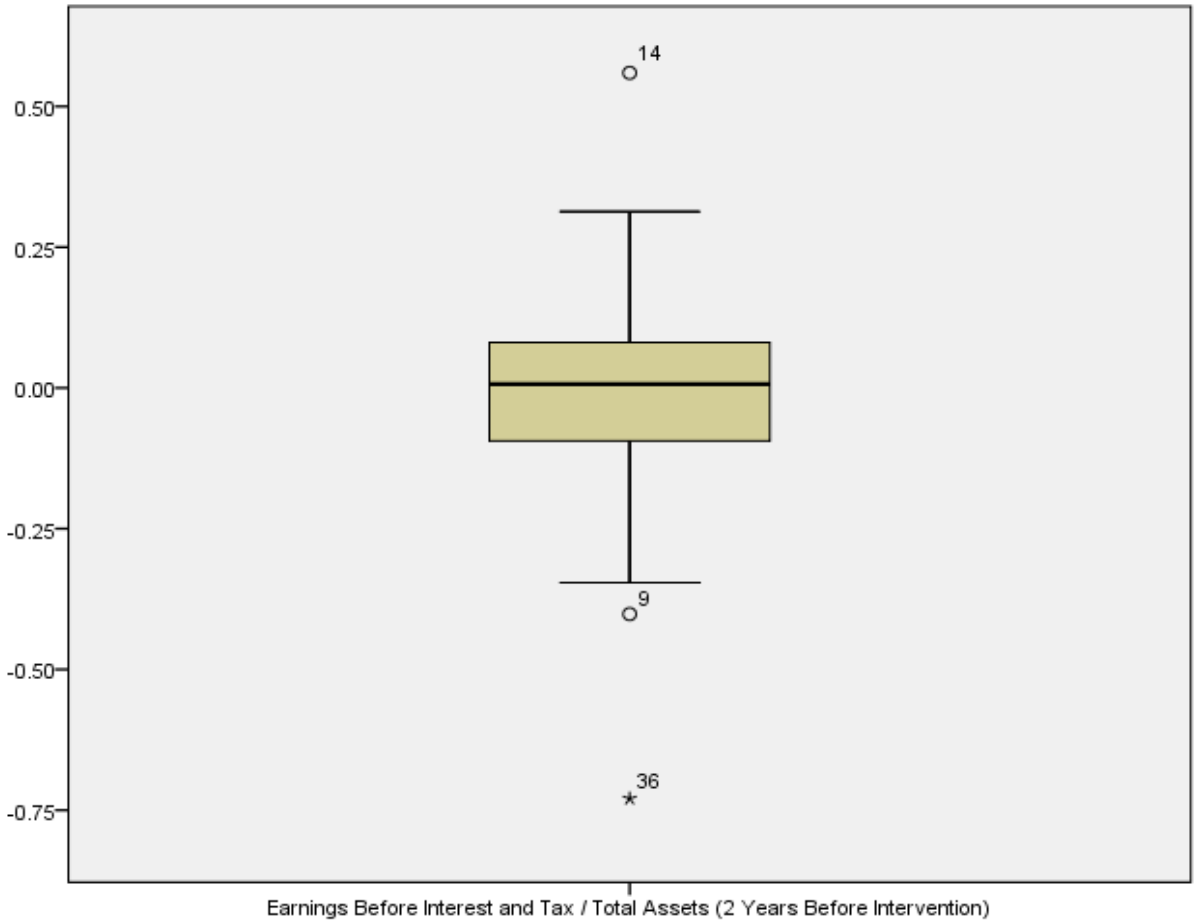
H0: $P \geq 0.05$ Variables are normally distributed

H1: $P < 0.05$ Variables are not normally distributed

Profitability Variables

Out of all the profitability variable, only one variable was normally distributed with a p value of 0.200 which is greater than 0.05 namely, the earnings before interest and tax/ total assets (EBITTA_L2) two years before the intervention. Therefore two years before the intervention the scores of all beneficiary companies were normally distributed. This is a very interesting observation as it means that the other profitability variables were not normally distributed implying that there was a difference in the financial performance of the beneficiary companies' pre and post intervention with regards their profitability. Figure 4.1 below represents the box plot with the distribution of all scores within the EBITTA_L2 variable.

Figure 4.1: EBITTA_L2 Box Plot



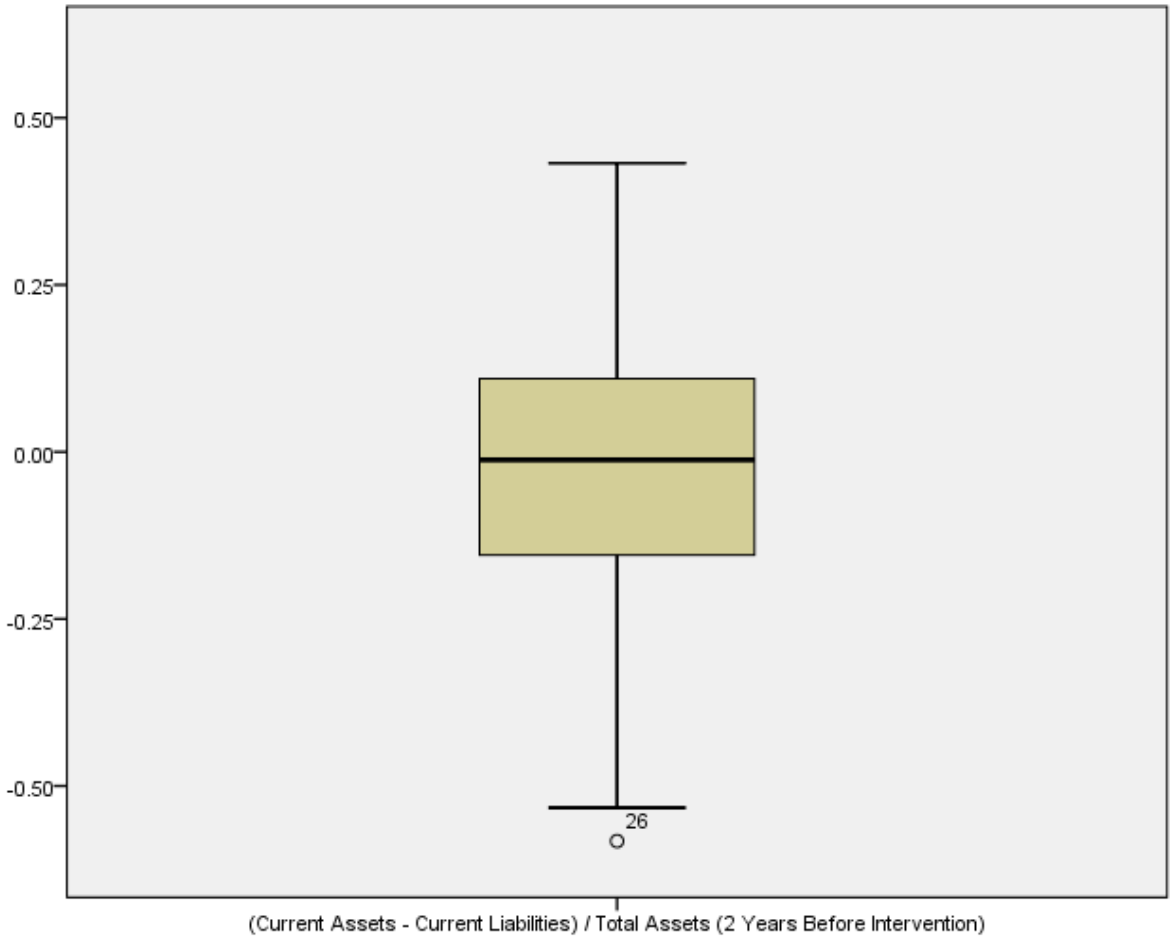
Source: Researcher's own

In the box plot, the length of the box represents the interquartile range and contains 50% of all cases. The median value is represented by the bold line in the middle of the box. The smallest and largest values are represented by the whiskers from the box. In the box plot above there were only three outliers in the scores.

Liquidity Variables

In the case of the liquidity ratios only two were normally distributed pre intervention namely: 1) current assets less current liabilities / total assets (CACLTA) for both 2 years and 1 year pre intervention and current liabilities / total assets (CLTA) 1 year pre intervention. The rest of the variables were non normal. It is interesting to note that there was a difference in all the liquidity ratios of the beneficiary companies post the intervention as all post invention distributions are non-normal. Below in Figure 4.2, 4.3 and 4.4 are the box plots showing the distribution:

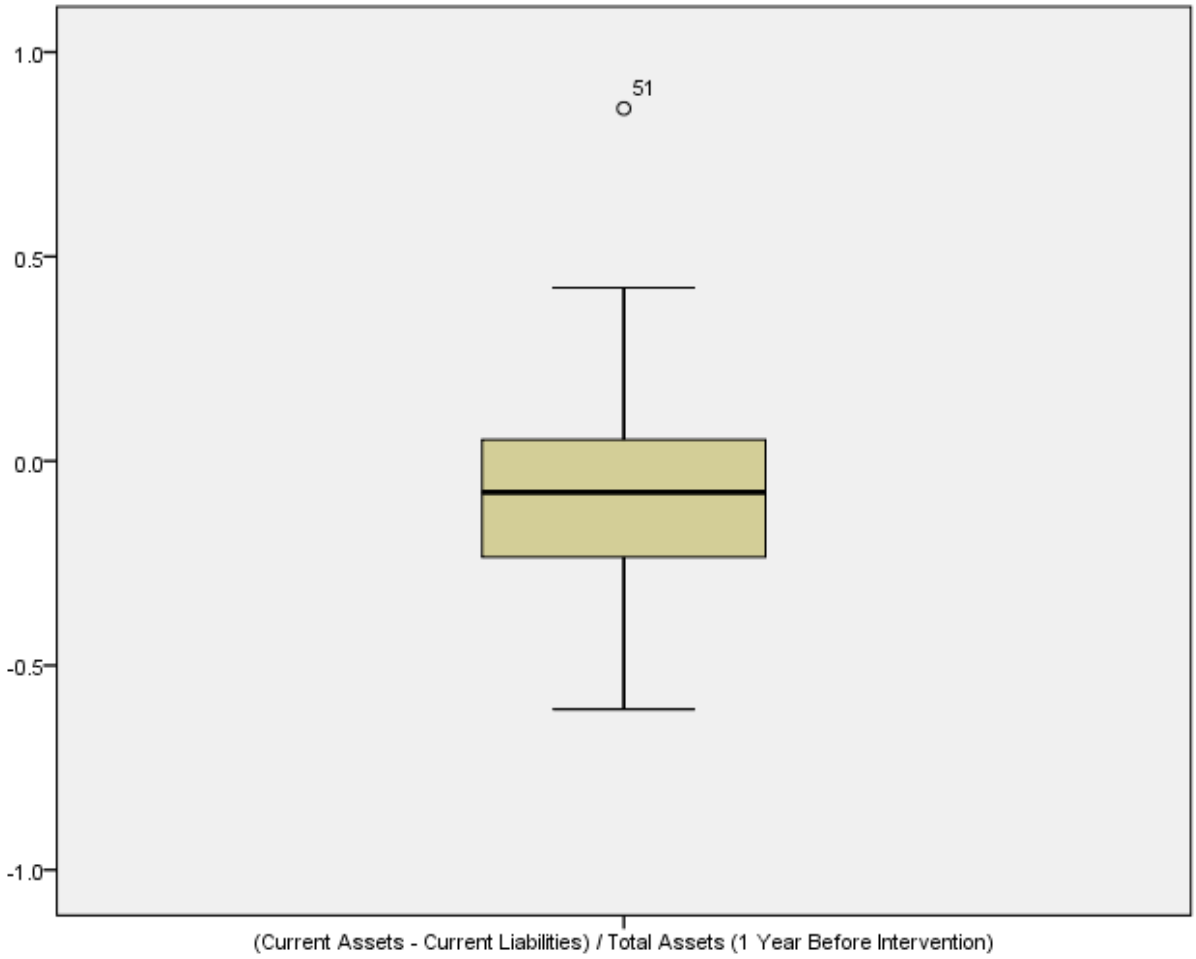
Figure 4.2: CACLTA_L2 Box Plot



Source: Researcher's own

As presented in Figure 4.2 above, data was normally distributed with the exception of one outlier.

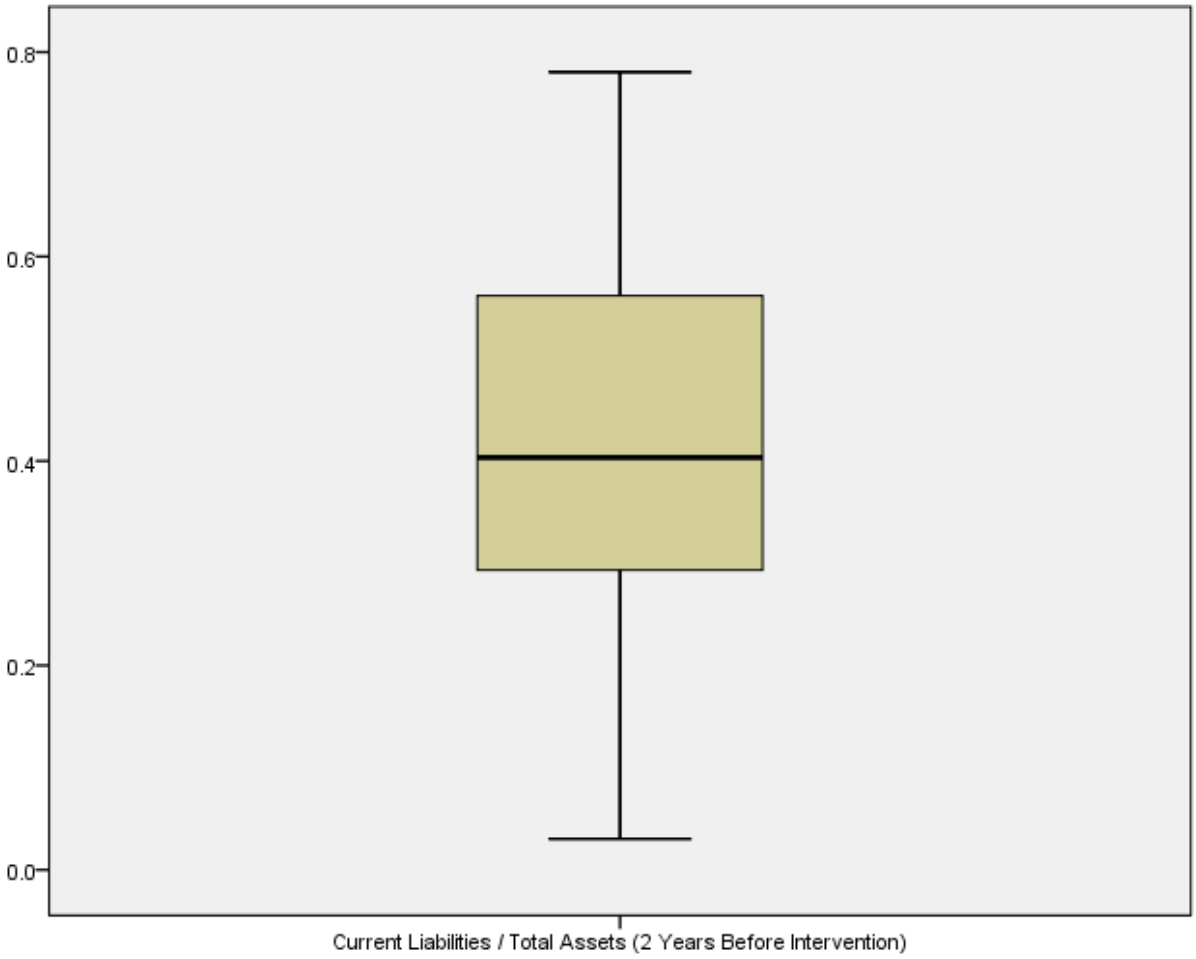
Figure 4.3: CACLTA_L1 Box Plot



Source: Researcher's own

As presented in Figure 4.3 above, all scores were normally distributed save for one outlier.

Figure 4.4: CLTA_L2 Box Plot

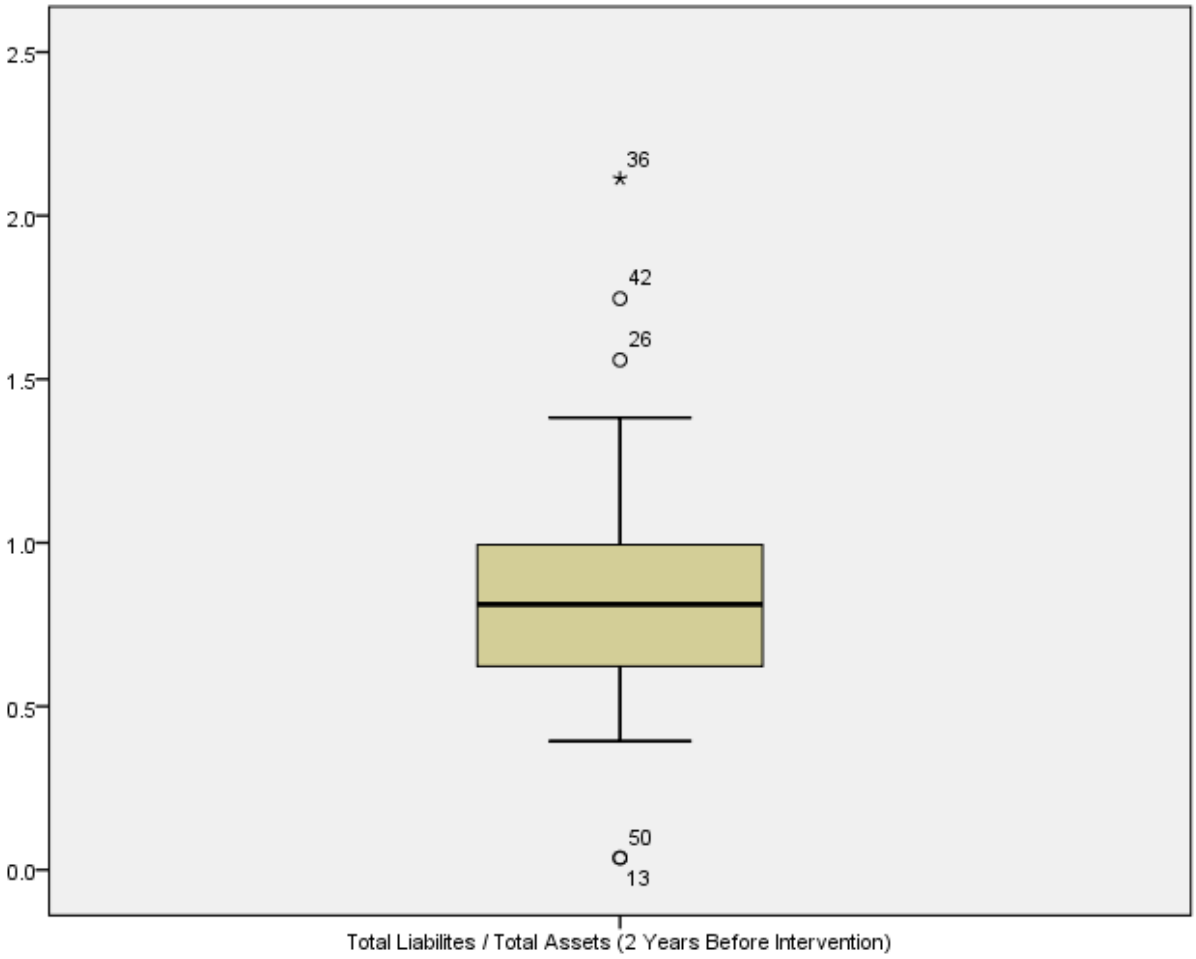


Source: Researcher's own

Leverage Variables

As was the case with profitability and liquidity the majority of the ratios were not normally distributed indication that there was a difference in all the leverage ratios of the beneficiary companies' pre and post the intervention. The only two normally distributed variables were total liabilities /total assets (TLTA_L2) and Total Equity/ total debt (ETD_L2). Figure 4.5 and Figure 4.6 below present the box plots of the respective distributions.

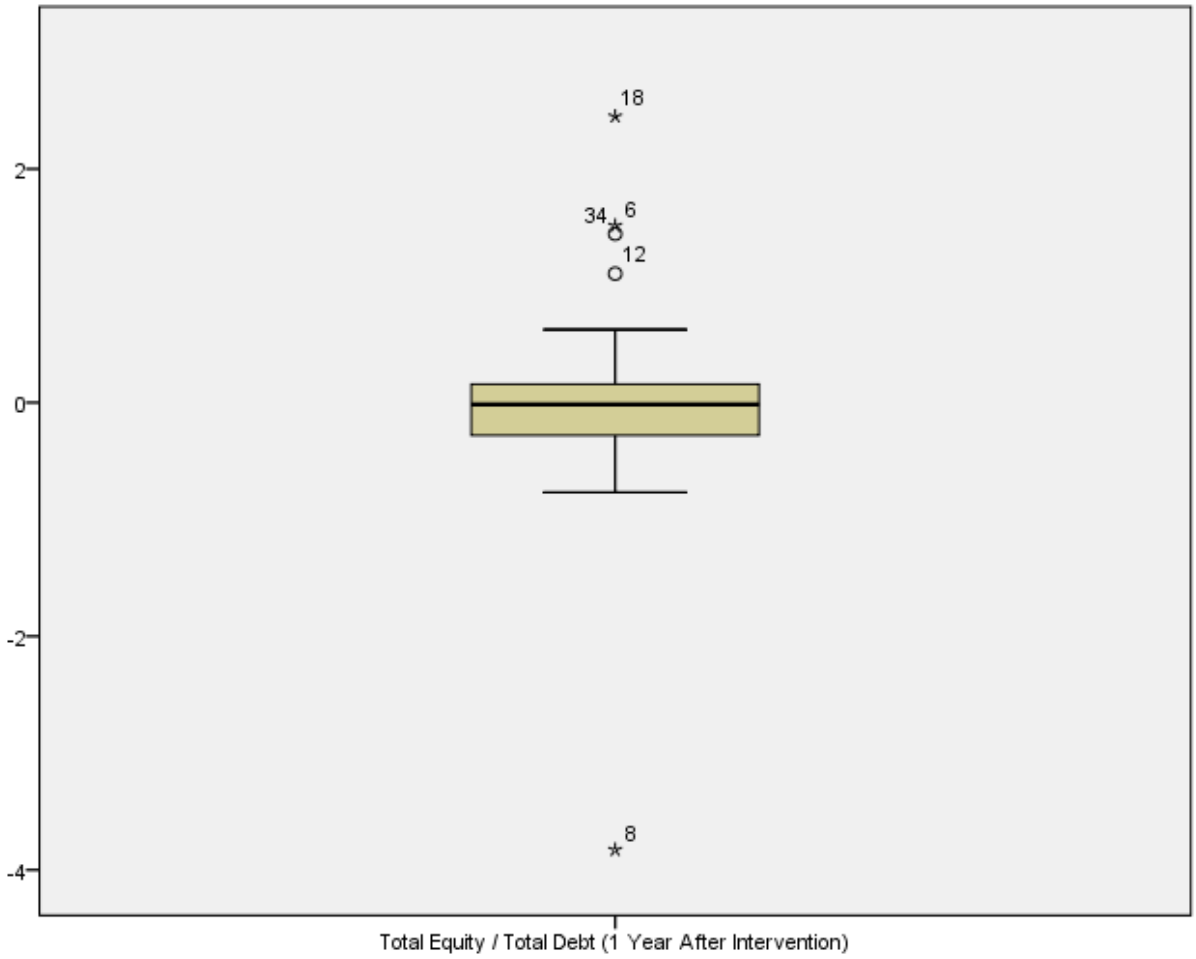
Figure 4.5: TLTA_L2 Box Plot



Source: Researcher's own

There were a few outliers in this box plot, however the rest of the scores were normally distributed

Figure 4.6: ETD_L1 Box Plot



Source: Researcher's own

There were a few outliers in this box plot both beyond the minimum and the maximum values.

Solvency Variables

Contrary to profitability, liquidity and leverage, all the ratios for solvency were not normally distributed meaning that there was a difference in all ratios of the beneficiary companies' pre and post the intervention.

Comparison of variables over time

For all eleven variables listed in table 4.2, the values pre intervention were compared to values post intervention to determine whether or not the distressed funding intervention had an effect or impact on the financial performance of beneficiary companies.

Because most of variable tested were found not to be normally distributed in the normality test in performed in Section 4.1, and there was also a presence of outliers in the data, non-parametric tests were chosen to test the variables over different time period.

As mentioned in the data analysis section of chapter three (chapter 3.8), the Friedman test is a non-parametric test was used as it is ideal when measuring the same sample data at three or more points in time or under three different conditions. In this study all variables were measured four years that is over three or more points in time, the Friedman test was considered appropriate to use in this study.

All eleven variables that were selected in order to determine the effect of the distressed funding intervention over the profitability, liquidity, solvency, capital structure and leverage of the beneficiary companies were tested.

As part of the Friedman test results, the mean ranks and the median values were also included in the descriptive statistics summaries for all eleven variables. The median is the observation that falls in the middle of the population and is calculated by placing all the observation in order from ascending to descending (Keller 2012). Therefore the results of the Friedman test took into account the ranked means together with the medians.

The null and alternative hypothesis for the Friedman test was follows:

H0: $P \geq 0.05$: There is no difference in the variables over different time periods

H1: $P < 0.05$: There is a difference in the variable over the different time periods

The results for all eleven variables are detailed below. For each variable, the descriptive statistics summary and the Friedman test summary are included and analysed.

1. Earnings Before Interest and Tax / Sales ("EBITS") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
EBITS_L2	41	-1,20	7,356	2,76	0,003
EBITS_L1	41	-0,56	2,784	2,15	-0,030
EBITS_1	41	-0,38	1,904	2,39	0,003
EBITS_2	41	-0,17	0,973	2,70	0,005

Table 4.6 **S**ource: Researcher's own

Table 4.6 presents the descriptive statistics summary for the variable EBITS for the four time periods namely two years pre intervention and two years post the intervention, i.e. EBITS_L2, EBITS_L1, EBITS_1 and EBITS _2 respectively. The total population sample was 41, the mean; standard deviation, mean ranks and median are also presented over the different time periods. In the case of EBITS, it is interesting to note that although the mean is negative for all four time periods, it is decreasing in value indicating an improvement in either the EBIT or Sales values of beneficiary companies.

Friedman Test Summary: EBITS

N	41
Chi-Square	6,044
Df	3
Asymp. Sig.	0,109

Table 4.7 **S**ource: Researcher's own

Table 4.7 summarises the results of the Friedman test, including population (N) Chi-square, degrees of freedom (df) and p - value (asymp value).

The EBITS p - value presented in Table 4.7 is 0.109 which is greater than 0.05, therefore we accept the null hypothesis and conclude that there is no difference in this variable over the different time periods. The median values are very close in all four periods ranging from -0.003 to 0.003, similarly the ranked means values range from 2.15 to 2.70 further evidence that there is no real difference in the variable over the four time periods.

2. Total Liabilities / Total Assets ("TLTA") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
TLTA_L2	41	0,89	0,347	1,90	0,811
TLTA_L1	41	1,13	1,052	2,27	0,891
TLTA_1	41	1,13	0,789	2,73	0,940
TLTA_2	41	1,45	1,311	3,10	0,994

Table 4.8 Source: Researcher's own

Table 4.8 presents that descriptive statistics summary for the variable total liabilities / total assets. The mean, standard deviation, mean ranks and median are presented over the pre and post intervention. It is interesting to note how the mean ranks and median all display an upward trend in the two years post the intervention.

Friedman Test Summary: TLTA

N	41
Chi-Square	20,210
Df	3
Asymp. Sig.	0,0005

Table 4.9 Source: Researcher's own

The p - value indicated in Table 4.9 is less 0.0005 which is smaller than 0.05, therefore we reject the null hypothesis in favour of the alternative and conclude that there is a statistically significant difference in Total Liabilities / Total Assets over time periods. There is a difference in the variable pre and post the intervention. Inspection of the mean ranks for TLTA_L2, TLTA_L1, TLTA_1 and TLTA_1 which start at 1.90 and increase to 3.10, and the median values ranging from 0.811 to 0.994 showed that there was an increase in the variables over time.

Having established that there is a statistically significant difference, we followed up with further post hoc tests and compared the four time periods against each other and investigated where the differences were across the four time periods was. The results of the post hoc test are presented in the next section.

3. Total Equity / Total Debt ("ETD") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
ETD_L2	41	0,26	0,398	3,24	0,203
ETD_L1	41	0,19	0,484	2,63	0,101
ETD_1	41	0,02	0,860	2,17	-0,016
ETD_2	41	0,10	0,747	1,95	0,023

Table 4.10 Source: Researcher's Own

The descriptive statistics summary for the variable Total equity / total debt is presented in table 4.10.

Friedman Test Summary: ETD

N	41
Chi-Square	24,132
Df	3
Asymp. Sig.	0,0005

Table 4.11: Source: Researcher's Own

The results of the Friedman test presented in Table 4.11 indicated a p - value of less than 0.005 which is less that the significance level of 0.05 meaning that there was a statistically significant difference in ETD pre and post intervention. A review of the mean ranks indicated a decrease from 3.24 at two years pre intervention to 1.95 at two years post the intervention. Similarly to variable TLTA, the results of the post hoc test for variable are presented in the following section.

For the presentation of the normality test and Friedman test results for the remainder of the variables, kindly refer to annexure A.

Post Hoc test: Wilcoxon Signed Rank test

Following the results of the Friedman test, for variables Total Liabilities/Total Assets (TLTA) and Total Equity /Total Debt (ETD) where we concluded that there was a statistically significant difference across the four time periods, post hoc tests were performed to test different pairs (e.g. TLTA_2 and TLTA_1) against each other in order to determine where the differences was across the four time periods. Table 4.12 below presents the results summary test for each pair:

Table 4.12 Wilcoxon Signed Rank Test: Pair Testing Summary Statistics

Pairs		Mean	N	Std. Deviation	Sum of ranks	Positive or Negative	Median
Pair 1	TLTA_L2	0,83	52,00	0,36	306,00	Positive	0,81
	TLTA_L1	1,08	52,00	0,94	1072,00	Negative	0,89
Pair 2	TLTA_L2	0,83	52,00	0,36	298,00	positive	0,81
	TLTA_1	1,17	52,00	0,75	1080,00	Negative	0,94
Pair 3	TLTA_L2	0,89	41,00	0,35	139,00	positive	0,81
	TLTA_2	1,45	41,00	1,31	722,00	Negative	0,99
Pair 4	TLTA_L1	1,07	53,00	0,94	422,00	positive	0,89
	TLTA_1	1,15	53,00	0,75	1009,00	Negative	0,94
Pair 5	TLTA_L1	1,11	42,00	1,04	203,00	positive	0,89
	TLTA_2	1,43	42,00	1,30	700,00	Negative	0,99
Pair 6	TLTA_1	1,11	42,00	0,79	310,00	positive	0,94
	TLTA_2	1,43	42,00	1,30	593,00	Negative	0,99
Pair 7	ETD_L2	0,11	52,00	0,81	967,00	positive	0,20
	ETD_L1	0,15	52,00	0,46	411,00	Negative	0,10
Pair 8	ETD_L2	0,11	52,00	0,81	991,00	positive	0,20
	ETD_1	-0,02	52,00	0,78	387,00	Negative	-0,02
Pair 9	ETD_L2	0,26	41,00	0,40	647,00	positive	0,20
	ETD_2	0,10	41,00	0,75	214,00	Negative	0,02
Pair 10	ETD_L1	0,15	53,00	0,45	1025,00	positive	0,10
	ETD_1	-0,02	53,00	0,77	406,00	Negative	-0,02
Pair 11	ETD_L1	0,19	42,00	0,48	628,00	positive	0,10
	ETD_2	0,10	42,00	0,74	275,00	Negative	0,02
Pair 12	ETD_1	0,02	42,00	0,85	482,00	positive	-0,02
	ETD_2	0,10	42,00	0,74	421,00	Negative	0,02

Table 4.12 Source: Researcher's own

Table 4.12 presents the mean, sample size, standard deviation and the sum of ranks for each pair from the individual Wilcoxon Signed Rank tests. The median for each variable is also included.

As discussed in chapter three, the test selected for this post hoc test was the individual Wilcoxon signed rank test together with a Bonferonni adjustment to control for Type 1 error.

The significance level used in the Friedman test was 5%. In making the significance level stricter using the Bonferonni adjustment, for each of the variables i.e. TLTA and ETD, we tested six pairs as indicated in Table 4.12 above. Therefore six more tests were performed on the same data. We made the significance level stricter by doing the following:

Tested the smallest p - value of each variable against a significance level of 0.05 divide by 6, therefore 0.05/6 = 0.08083
Tested the 2nd smallest p - value of each variable against a significance level of 0.05 divide by 5, therefore 0.05/ 5 = 0.01
Tested the 3rd smallest p - value of each variable against a significance level of 0.05 / 4 = 0.0125
Tested the 4th smallest p - value of each variable against a significance level of 0.05 / 3 = 0.0167
Tested the 5th smallest p - value of each variable against a significance level of 0.05 / 2 = 0.025
Tested the largest p - value of each variable against a significance level of 0.05 / 1 = 0.05

The results from the tests are as presented below:

Total Liabilities / Total Assets ("TLTA")

Table 4.13 presents the results of the Wilcoxon signed ranks including the Z - value and the p - value.

Table 4.13: TLTA Wilcoxon Signed Rank Test Summary

	Z	Asymp. Sig. (2-tailed)
TLTA_L1 - TLTA_L2	-3.488[b]	0,0005
TLTA_1 - TLTA_L2	-3.561[b]	0,0004
TLTA_2 - TLTA_L2	-3.777[b]	0,0002
TLTA_1 - TLTA_L1	-2.598[b]	0,0094
TLTA_2 - TLTA_L1	-3.107[b]	0,0019
TLTA_2 - TLTA_1	-1.769[b]	0,0768

Table 4.13 Source: Researcher's own

The p - values in Table 4.13 were arranged in ascending order from smallest to largest and compared to the bonferonni adjusted significance level presented as presented Table 4.14 below:

Table 4.14: TLTA Wilcoxon Signed Rank test with Bonferonni adjustment

Pairs		Asymp. Sig. (2-tailed)	Bonferroni adjusted
1st Pair	TLTA_2 - TLTA_L2	0,0002	0,0083
2nd Pair	TLTA_1 - TLTA_L2	0,0004	0,01
3rd Pair	TLTA_L1 - TLTA_L2	0,0005	0,125
4th Pair	TLTA_2 - TLTA_L1	0,0019	0,167
5th Pair	TLTA_1 - TLTA_L1	0,0094	0,025
6th Pair	TLTA_2 - TLTA_1	0,0768	0,05

Table 4.14: Source: Researcher's own

Pair TLTA_2 - TLTA_L2 (the pair with smallest p value) was tested against a significance level of 0.0083. The test revealed a statistically significant difference between the two time periods i.e. between TLTA_L2, two years before the intervention and TLTA_2, 2 years post the intervention. Therefore the solvency of the beneficiary companies improved following the intervention. The IDC distressed funding scheme had a positive impact on solvency. The median values improved from 0.81 in TLTA_L2 to 0.99 in TLTA_2.

Pair TLTA_1 - TLTA_L2, the pair with the second smallest p value, was tested against the significance level of 0.01. The Wilcoxon Signed Rank test indicated that there was a statistically significant difference in solvency levels of beneficiary companies two year before the intervention (TLTA_L2) and one year following the intervention (TLTA_1). The median scores on TLTA improved to 0.94 (TLTA_1) from 0.81 (TLTA_L2).

In terms of the third pair - TLTA_L1 and TLTA_L2, The test revealed a statistically significant difference in the solvency levels two years before the intervention TLTA_L2 and one year before the intervention TLTA_L1. It is interesting to note that both time periods were before the intervention, thus therefore the difference was attributable to other factors. The median scores improved from 0.81 in TLTA_L2 to 0.89 in TLTA_L1.

In the fourth pair's case, the Wilcoxon Signed Rank test indicated that there was a statistically significant difference in solvency levels of beneficiary companies between one year before the intervention (TLTA_L1) and one year following the intervention (TLTA_1). The median scores on TLTA improved from 0.89 (TLTA_L1) to 0.94 (TLTA_1). We conclude that the intervention had an impact on the solvency levels of the beneficiary companies.

The test for Pair 5 revealed a statistically significant difference in beneficiaries who accessed the intervention, between TLTA_L1 , one year before the intervention and TLTA_2, with median scores improving from 0.89 (TLTA_L1) to 0.99 (TLTA_2). The test revealed that the intervention improved the solvency of beneficiary companies.

Lastly, for pair 6 i.e. TLTA_1 to TLTA_2, the Wilcoxon Signed Rank test indicated that there is no statistically significant difference in solvency levels of beneficiary companies between one year after the intervention (TLTA_1) and two year following the intervention (TLTA_2). Despite the median scores improving from 0.94 (TLTA_1) to 0.99 (TLTA_2). As both time periods are after the intervention has been introduced, this could mean that the intervention managed to stabilise solvency levels

Overall, the above tests revealed that the IDC distressed funding had a positive impact in improving solvency levels of beneficiary companies.

Total Equity / Total Debt

Table 4.15 presents the results of the Wilcoxon signed ranks including the Z - value and the p - value for all ETD pairs

Table 4.15: ETD Wilcoxon Signed Rank Test Summary

		Z	Asymp. Sig. (2-tailed)
Pair 7	ETD_L1 - ETD_L2	-2.532[c]	**0,0113**
Pair 8	ETD_1 - ETD_L2	-2.750[c]	**0,0060**
Pair 9	ETD_2 - ETD_L2	-2.805[c]	**0,0050**
Pair 10	ETD_1 - ETD_L1	-2.740[c]	**0,0061**
Pair 11	ETD_2 - ETD_L1	-2.207[c]	0,0273
Pair 12	ETD_2 - ETD_1	-.381[c]	0,7029

Table 4.15 Source: Researcher's own

In controlling for Type 1 errors, the p - values in Table 4.15 were arranged in ascending order from smallest to largest and compared against the bonferonni adjusted significant levels as presented in Table 4.16 below.

Table 4.16: ETD Wilcoxon Signed Rank test with Bonferonni adjustment

Pairs		Asymp. Sig. (2-tailed)	Bonferroni adjusted
1st Pair	ETD_2 - ETD_L2	**0,0050**	**0,0083**
2nd Pair	ETD_1 - ETD_L2	**0,0060**	**0,01**
3rd Pair	ETD_1 - ETD_L1	**0,0061**	**0,125**
4th Pair	ETD_L1 - ETD_L2	**0,0113**	**0,167**
5th Pair	ETD_2 - ETD_L1	0,0273	**0,025**
6th Pair	ETD_2 - ETD_1	0,7029	0,05

Table 4.16 Source: Researcher's own

The first pair ETD_2 - ETD_L2 had the smallest p - value and was tested against a significance level of 0.0083. The test indicated that there was a statistically significant difference between the two periods. Therefore leverage of beneficiary companies who accessed the intervention improved from 2 years before the intervention to two years post the intervention. The median scores decreased from 0.20 in ETD_L2 to 0.02 in ETD_2.

The second pair, comprising of ETD_1 and ETD _L2 was tested against the significance level of 0.01. The Wilcoxon Signed Rank test revealed a statistically significant difference in leverage levels two year before the intervention (ETD_L2) and one year following the intervention (ETD_1). The median scores decreased from 0.20 (ETD_L2) to -0.02 (ETD_1). Therefore the intervention had a positive impact on the leverage of beneficiary companies.

The Wilcoxon Signed Rank Test indicated that there was a statistically significant difference in the leverage levels with regards to the third pair ETD_1 - ETD_L1. There was a decrease in the level of leverage one year before the intervention (ETD_ L1) and one year following the intervention (ETD_1). The median scores for ETD improved from 0.10 in ETD_L1 to -0.02 in ETD_1.

The test for fourth pair, ETD_L1 - ETD_L2 revealed a statistically significant difference in the leverage of the beneficiary companies two years before the intervention and one year before the intervention. The median scores improved from 0.20 (ETD_L2) to 0.10 (ETD_L1). This is an interesting observation as both years were pre intervention; therefore the difference was not caused by the intervention but by other structural factors.

For the fifth pair, ETD_2 - ETD_L1, the Wilcoxon Signed Rank test indicated that there was no statistically significant difference in the leverage levels two years after the intervention (ETD_2) and one year before the intervention. Although the intervention might have had a positive impact one year post the intervention, i.e. at ETD_1, leverage levels of beneficiary companies most likely normalised by ETD_2.

In the case of the sixth pair, ETD_2 - ETD_1, the test revealed that there was no statistically significant difference between in beneficiary companies leverage levels between one year post the intervention ETD_1 and two years post the intervention ETD_2. The median scores increased from -0.02 (ETD_1) to 0.02 (ETD_2). As is the cash with the fifth pair, leverage levels of beneficiary companies probably stabilised once the intervention was introduce as both ETD_1 and ETD_2 are periods following the intervention.

Overall, the above tests revealed that the IDC distressed funding had a positive effect on the leverage levels of beneficiary companies.

5 RESEARCH CONCLUSIONS

5.1 INTRODUCTION

The previous chapter presented the findings of the tests performed on the data collected for the sample. This chapter will be focused around discussing the findings presented in chapter four and answering the research questions stated in chapter 1.

5.2 INTERPRETATION OF FINDINGS

Chapter four detailed the results from the tests performed in measuring the effect of the IDC distressed funding scheme on the financial performance of the companies who accessed the funding. The IDC distressed funding scheme was introduced as a form of intervention following the global financial crisis that started in 2007, aimed at rescuing companies operating in South Africa. The study investigated the impact of the IDC distressed funding scheme on the financial performance of beneficiary companies by assessing the beneficiary companies' profitability, liquidity, solvency, capital structure and leverage two years pre and two years post the introduction of intervention.

The importance of government interventions following markets failures (similar to the global financial crisis) was reviewed and is well documented in literature. More specifically, diverse research has been performed over the years on the impact and effectiveness of government intervention programmes aimed at recapitalisating the banking sector following market failures. Based on the review, the government interventions have been found to be effective in stabilising economies during crisis periods.

However, very few studies have focused their analysis on government interventions aimed at directly at corporate (non-financial) companies during periods where market failures are prevalent. Although there have been many government intervention programmes aimed at SMEs to address market failures such as access to funding or credit constraints, there have been very few studies which analysed the effectiveness of these programmes, which is viewed as a gap in literature. As is the case as with any intervention, stakeholders require an assessment to determine whether or not the program had met its objectives.

To my knowledge, there were no studies which analysed the impact of the direct intervention on the corporate sector following a market failure such as the global financial crisis and the negative shock to the supply of credit especially in a developing country setting. This is the major limitation of this study, the non – existent literature on the impact of this type of direct intervention on corporate companies.

Based on the review of available literature on the assessment of company financial performance and literature on failure prediction models for corporate companies, analysing variables that measure profitability, liquidity, solvency, capital structure and leverage of the companies, was selected as the appropriate measurement tool to assess the effectiveness of the IDC distressed funding scheme on beneficiary companies. Non parametric tests were employed in this study to statistically measure the variance in the above mentioned variables across the different time periods i.e. two years before and two years after the intervention.

The first finding of this research study was that the majority of the beneficiary companies in the sample were in the metals and chemicals sectors. These sectors fall under the larger manufacturing value chain which has high job creation potential. Therefore we can deduce that the IDC distressed funding intervention benefited companies which were able to save current jobs or potentially create more jobs in the South African economy during a time where the economy was on a downward trajectory.

The assessment of the solvency (as measured by total liabilities/ total assets) of the beneficiary companies revealed an improvement in the long term solvency of beneficiary companies following the introduction of the IDC distressed funding into the business. With the most significant improvement being in the first financial year following the intervention. This is consisistent with the theory that corporate companies experience negative shocks to credit supply during financial crisis (market failures) periods. The study concluded that the intervention was effective in improving the solvency of the beneficiary companies.

The study also concluded that capital structure and leverage (as measured by total equity / total debt) of the beneficiary firms improved following the accessing the IDC distressed funding. Therefore intervention was effective in improving the capital structure and leverage of the beneficiary companies. These findings are in consistent with the pecking order theory, which suggests that the more profitable firms will demand less debt than less profitable firms,

as more profitable companies are expected to have internally generated funds. Therefore as the intervention was introduced, firms are assumed to have been able to increase internally generated funds and reduce their need for external debt.

In contrast to the solvency, capital structure and leverage, the analysis of profitability had a different outcome. The tests conducted on profitability variables indicated that there was no statistically significant change in profitability of beneficiary companies' before and after accessing the intervention. However, as profitability of any corporate company can be affect by a myriad of factors, including internal factors such as management skills, company marketing strategies, operational efficiencies and structural factors such as economic activity, demand from consumers etc. Based on support from literature, the South African economy activity was on a downturn, trade export was down and consumer demand was low during the time that the intervention was introduced. Therefore these factors could have contributed to subdued profitability despite the introduction of the IDC distressed funding into the business.

In examining the liquidity of the beneficiary companies, there was also no statistically significant differences found pre and post the intervention. Liquidity is affected by the efficient management of working capital in the company. Similarly to profitability, negative macro - economic factors in the South African economy and operating efficiencies likely contributed to the results, despite the introduction of the intervention.

Overall the IDC distressed funding had a positive impact on the financial performance of beneficiary companies.

6 RECOMMENDATIONS FOR FUTURE RESEARCH

The following is the list of topics that can be considered for future research:

Larger sample for testing

A study which includes a bigger sample of companies from all the non - financial companies in South Africa, which extends over a longer period of time following introduction of the intervention. Results from such a study may also give a clearer impact assessment of the intervention on the financial performance of beneficiary companies.

Qualitative factors

A study which not only considers quantitative factors such as financial statements ration but also considers other qualitative factors of the business such as corporate governance, other macroeconomic conditions in measuring the impact of the funding intervention. This study could employ a mixed method approach incorporating both qualitative and quantitative methods of testing. This could yield a more comprehensive.

Inclusion of control group

A study which includes a control group of companies i.e. similar companies in similar sectors and operating environments, who did not receive the funding intervention during the same time period of testing. Comparing the two groups of companies will provide a greater understanding as to the impact of the funding intervention.

Multiple interventions programs

A study involving the impact assessment of more than one intervention program. Assessing more than one intervention program could allow for the assessment the design on the program on the effectiveness. This type of research could allow for better designed intervention programs that will overcome any shortcomings of the existing intervention programs which ultimately result in better impact results.

LIST OF REFERENCES

Afrane, S., 2008, "Impact Assessment of Microfinance Interventions in Ghana and South Africa A Synthesis of Major Impacts and Lessons", Journal of Microfinance, volume 4, number 1.

Aivazian, V. A. and Santor, E., 2008, "Financial constraints and investment: Assessing the impact of a World Bank credit program on small and medium enterprises in Sri Lanka", Canadian Journal of Economics / Revue canadienne d'Economique, volume. 41, number 2 May 2008.

Akerlof, G., 1970, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism", Quarterly Journal of Economics, volume 84, number 3 pp 488–500.

Altman, E. I., 1968, "Financial ratios, discriminant analysis and the prediction of corporate bankruptcy", The Journal of Finance, volume xxiii, number 4, 589 – 609.

Ardic, O., Mylenko, N. and Saltane, V., 2012, "Access to Finance by Small and Medium Enterprises: A Cross – Country Analysis with a New Data Set", Pacific Economic Review, volume 17, number 4 pp. 491–513.

Babbie, E., 2013, The Practice of Social Research, Thirteenth Edition, International Edition, Cengage Learning.

Batra, G., and Mahmood, S., 2003, "Direct support to private firms: Evidence on effectiveness", World Bank policy research working paper, 3171.

Beaver, W. H., 1968, "Alternative accounting measures as predictors of failure", Accounting review, 113 - 122.

Beaver, W. H., 1966, "Financial Ratios as Predictors of Failure", Journal of accounting research, 71 - 111.

Becchetti, L. and Trovato, G., 2002 'The Determinants of Growth for Small and Medium Sized Firms: The Role of the Availability of External Finance", Small Business Economics, 19(4), pp. 291 – 306.

Bernanke, B., Gertler, M., and Gilchrist, S., 1996, "The Financial Accelerator and Flight To Quality", The Review of Economics & Statistics, volume lxxiii, number 1.

Bernanke, B. and Gertler, M., 1989, "Inside the Black Box: The Credit' Channel of Monetary Policy Transmission, Journal of Economic Perspectives", volume 9, number 4, Fall 1995, pp 27-48.

Biggs, T., 2002, "Is small beautiful and worthy of subsidy? Literature review", International Finance Corporation (IFC), Washington, DC.

Blum, M. P., 1974, "The Failing Company Doctrine", Boston College Law Review, Volume 16 Issue 1 Number 1.

Brazilian National Bank for Economic and Social Development, 2010, Annual Report 2010.

Calomiris, C. and Mason, J., 2003, "How to restructure failed banking systems: lessons from the U.S. in the 1930's and Japan in the 1990s", In Governance, Regulation, and Privatization in the Asia-Pacific Region, NBER East Asia Seminar on Economics, volume 12, pp. 375 - 424, University of Chicago Press.

Claessens, S., Dell'Ariccia, G., Igan, D. and Laeven, L., 2010, "Cross-country experiences and policy implications from the global financial crisis", Economic Policy 25, number 62, pp 267 – 293.

Cole, R.A., 1997, "The Importance of Relationships to the Availability of Credit", Journal of Banking & Finance, volume 22, number 6, pp 959 - 977.

Corder, G. W. and Foreman, D. I., 2014, Nonparametric statistics: A step-by-step approach, John Wiley & Sons.

Creswell, J. W., 2013, Research design: Qualitative, quantitative, and mixed methods approaches, Sage publications.

Crotty, M., 1998, The foundations of social research: Meaning and perspective in the research process. Sage publications.

Culpeper, R., 2012, "Financial Sector Policy and Development in the Wake of the Global Crisis: the role of national development banks", Third World Quarterly, volume. 33, number 3, 2012, pp 383–403.

Demirguc-Kunt, Asli and Vojislav Maksimovic. 1996. "Financial Constraints, Uses of Funds, and Firm Growth: An International Comparison", World Bank Policy Research Working Paper Number 1671. Washington, D.C.

de Olloqui, F (ed.), 2013, Public Development Banks Toward a New Paradigm, Inter-American Development Bank

Drezner, Z., Turel, O. and Zerom, D., 2010, "A Modified Kolmogorov–Smirnov Test for Normality", Communications in Statistics — Simulation and Computation, Volume 39, number 4, pp 693–704.

Duchin, R., Ozbas, O. and Sensoy, B., 2010 "Costly External Finance, Corporate Investment, and the Subprime Mortgage Credit Crisis", Journal of Financial Economics, volume 97 number 3, pp 418–435

Edmister, R.O., 1972, "An Empirical Test of Financial Ratio Analysis for Small Business Failure Prediction", The Journal of Financial and Quantitative Analysis, volume. 7, Number. 2, pp. 1477-1493

Export-Import Bank of Thailand, 2010, Annual Report 2010

Gaby, M., Walker, D.A., 2011, "Impacts of TARP on Financial Institutions", Journal of applied finance, number. 2, 2011

Gorton, G. and Huang L., 2004, "Liquidity, efficiency, and bank bailouts", American Economic Review, volume 94, pp 455-483.

Hallberg, K., 2000, "A Market-Oriented Strategy for Small and Medium-Scale Enterprises", Discussion Paper 40, International Finance Corporation.

Hernandez-Canovas, G., and Martinez-Solano, P., 2007, "Effect of the number of banking relationships on credit availability: evidence from panel data of Spanish small firms", Small Business Economics, volume 28 number 1, pp 37-53.

Holstrom, B. and Tirole, J., 1997, "Financial Intermediation, Loanable Funds and the Real Sector, The Quarterly Journal of Economics, Vol CXII, Issue 3, August 2007

Industrial Development Corporation, 2009, Annual Report 2009.

Ivashina, V. and Scharfstein, D., 2010, "Loan Syndication and Credit Cycles", American Economic Review: Papers & Proceedings 100 (May 2010): 57–61.

Jawadi, F., Arouri, M. and Nguyen, D, 2010, "Global Financial Crisis, Liquidity Pressure in Stock Markets and Efficiency of Central Bank Interventions", Applied Financial Economics, volume 20, pp 669–680.

Kang, J. and Stulz, R., 2000, "Do Banking Shocks affect Borrowing Firm Performance? An Analysis of the Japanese Experience", Journal of Business, volume 73, number 1, pp 1–23.

Keller, G., 2012, Managerial Statistics, 9th Edition, Cengage Learning.

Laeven, L. Valencia F.N., 2013, "The Real Effects of Financial Sector Interventions during Crises", Journal of Money, Credit and Banking, volume. 45, number.

Leedy, P.D. and Ormond, J.E., 2009, Practical Research, Planning and Design, Ninth Edition, Pearson Education Publishers, New Jersey.

Lerner, J., 1999**,** "The Government as Venture Capitalist: The Long-Run Impact of the SBIR Program", *Journal of Business.* 1999. volume. 72, number. 3.

Mosselman, M. and Prince, Y.M., 2004, "Review of Methods to Measure the Effectiveness of State Aid to SMEs: Final Report to the European Commission". EIM Business & Policy Research.

Myers, S., Majluf, N., 1984, "Corporate Financing and investment decisions when firms have information that investors do not have", Journal of Financial Economics 13, pp 187–221.

Nacional Financiera Banca de Desarrollo, 2008, Annual Report 2008.

Neuman, W.L., 2011, Social research methods: qualitative and quantitative approaches, 7th edition, Pearson Education: Boston, USA:

Ottaviano, G.I.P. and de Sousa, F. L., "The effects of BNDES loans on the productivity of Brazilian manufacturing firms", United Nations Development Programme Project.

Pallant, J., 2007, SPSS survival manual: A step-by-step guide to data analysis using SPSS version 15. Nova Iorque: McGraw Hill.

Pattanachak, K. Lee, J.M., 2010, "Sources of output volatility from financial crisis in emerging markets", Applied Financial Economics, 2010, 20, pp 183 –199.

Peek, J. and Rosengren, E., 1995, "The Capital Crunch: Neither a Borrower nor a Lender Be" Journal of Money, Credit and Banking. Vol. 27, No. 3 pp 625 - 638.

Peek, J. and Rosengren, E., 1997, "The International Transmission of Financial Shocks: The Case of Japan", American Economic Review 87, 495 –505.

Philippon, T. and Schnabl, P., 2013, "Efficient recapitalization", The Journal of Finance, volume LXVIII, number. 1, 68(1), pp 1-42.

Phillipon, T. and Skreta, V., 2012, "Optimal Interventions in Markets with Adverse Selection", American Economic Review, 102(1): pp 1–28.

Philippon, T. and Skreta, V., 2009, "Efficient Interventions in Markets with Adverse Selection", Working Paper, New York University.

Ranga, M. and Etzkowitz, H., 2012, "Great Expectations: An Innovation Solution to the Contemporary Economic Crisis", European Planning Studies, volume 20 number 9, pp 1429-1438.

Richardson, F. M., Kane, G. D., and Lobingier, P., 1998, "The impact of recession on the prediction of corporate failure", Journal of Business Finance & Accounting volume 25 number 1 - 2, pp 167 - 186.

Rochon, L. and Rocci, S., 2010, "Has "It" Happened Again?", International Journal of Political Economy, volume. 39, number. 2, Summer 2010, pp. 5 – 9.

Romero-Martıneza, A., Ortiz-de-Urbina-Criadob, M. and Soriano, D. , 2010, "Evaluating European Union support for innovation in Spanish small and medium enterprises", The Services Industries Journal, volume 30, number 5.

Rosenfeld, C.M., 2007, "The Effect of Banking Relationships on the Future of Financially Distressed Firms", Carlson School of Management Working Paper.

Saunders, M., Lewis, P. and Thrornhill, A., 2009, Research methods for business students, 5th Edition, Pearson Education .

Smallridge, D., de Olloqui, F. 2010, "A Health Diagnostic Tool for Public Development Banks", Inter-American Development Bank.

Stiglitz, J. and Weiss A., 1981, "Çredit Rationing in Markets with Imperfect Information", The American Economic Journal, volume 71, number 3.

St. Laurent, R. and Turk, P., 2012, 'The Effects of Misconceptions on the Properties' of Friedman's Test", Communications in Statistics—Simulation and Computation, Volume 42 pp 1596–1615.

Storey, D.J., 1998, "Six Steps to Heaven**:** Evaluating the Impact of Public Policies to Support Small Businesses in Developed Economies", Centre for Small and Medium Sized Enterprises, working paper number 59 September 1998

Tirole, J., 2012, "Overcoming Adverse Selection: How Public Intervention Can Restore Market Functioning", American Economic Review, 102(1): pp 29–59

Thode, H. C., 2002, "Testing for Normality", New York: Marcel & Dekker Inc. Chapter 4

Valencia, F., 2008, "Banks' Precautionary Capital and Credit Crunches", IMF Working Paper No. 08/248.

Watson, J., 2006, "External Funding and Firm Growth: Comparing Female- and Male-Controlled SMEs", Venture Capital, volume. 8, number 1, pp 33 – 49.

World Bank Group, 2009, "Global Development finance Charting a Global recovery Review, Analysis and Outlook", International Bank for Reconstruction and Development, The World Bank

Zikmund, W.G., 2003, Business research methods, 7th edition, Ohio: Thomson, South-Western.

APPENDICES

Appendix A: Comparison of variables over time results

1. Earnings Before Interest and Tax / Total Assets ("EBITTA") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
EBITTA_L2	41	-0,01	0,209	2,73	0,007
EBITTA_L1	41	-0,13	0,418	2,24	-0,047
EBITTA_1	41	-0,06	0,234	2,32	0,007
EBITTA_2	41	-0,06	0,305	2,70	0,007

Table 4.17: **S**ource Researcher's own

The descriptive statistics summary for the variable EBITTA over the four time periods is presented in table 4.17. The total population sample was 41, the mean; standard deviation, mean ranks and median are also presented. It is interesting to note that he mean was negative for all time periods.

Friedman Test Summary: EBITTA

N	41
Chi-Square	4,815
Df	3
Asymp. Sig.	0,186

Table 4.18: **S**ource Researcher's own

For the variable EBITTA we accept the null hypothesis and conclude that there is no difference in this variable over the different time periods as the p value of 0.186 is greater than 0.05. The mean ranks 2.24 to 2.73 are very similar in value, same goes for the medians which range from -0.0047 to 0.007.

2. Sales / Total Assets ("STA") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
STA_L2	41	1,39	0,811	2,54	1,313
STA_L1	41	1,47	1,085	2,44	1,370
STA_1	41	1,38	0,829	2,37	1,313
STA_2	41	1,56	1,048	2,66	1,368

Table 4.19 **S**ource: Researcher's own

Table 4.19 presents the descriptive statistics for the variable STA with a population size of 41 beneficiary companies, the mean, standard deviation, mean ranks and median for 2 years pre intervention and two years post intervention. It is interested to note that the mean and the ranked means is at their highest values two years post intervention which indicates that there was an upward increase in sales two years post the intervention.

FriedmanTest Summary: STA

N	41
Chi-Square	1,185
Df	3
Asymp. Sig.	0,757

Table 4.20 **S**ource: Researcher's own

The Friedman test p value for STA of 0.757 is greater than 0.05, therefore we accept the null hypothesis that there is no significant difference in this variable over the four time periods at 5% significance level. The median values in all four periods remained constant around 1.300 as reflected in Table 4.20; this implies that there was no statistically significant difference in the variable over time. The mean ranks are also similar ranging from 2.44 to 2.66.

3. Current Assets less Current Liabilities / Sales ("CACLS") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
CACLS_L2	41	0,71	5,226	2,80	-0,009
CACLS_L1	41	1,14	7,888	2,22	-0,050
CACLS_1	41	0,43	4,974	2,66	-0,016
CACLS_2	41	0,34	2,398	2,32	-0,049

Table 4.21 **S**ource: Researcher's own

The descriptive statistics for CACLS indicate a sample size of 41 beneficiary companies. From Table 4.21 it can be seen that the median values were negative over all the time periods tested.

Friedman Test Summary: CACLS

N	41
Chi-Square	5,663
Df	3
Asymp. Sig.	0,129

Table 4.22 **S**ource: Researcher's own

Table 4.22 shows a p - value of 0.129 which is greater than p value of 0.05, therefore we accept the null hypothesis at 95% confidence level that there was no statistically significant difference in the values for the variable current assets less current liabilities /sales pre and post intervention. Upon further investigation the ranked means ranging between 2.32 and 2.80 which are close in value support the null hypothesis that there is no difference in variables over the four time periods. The median values from -0.009 and -0.050 also support the conclusion that there was no difference in the values over time.

4. Current Assets less Current Liabilities / Total Assets ("CACLTA") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
CACLTA_L2	41	-0,03	0,225	2,78	-0,012
CACLTA_L1	41	-0,10	0,267	2,24	-0,077
CACLTA_1	41	-0,19	0,511	2,59	-0,016
CACLTA_2	41	-0,13	0,662	2,39	-0,064

Table 4.23 **S**ource: Researcher's own

Table 4.23 shows that the sample size for the variable CACLTA was 41 in all four time periods. The mean, standard deviation, mean ranks and median are also presented in the table 4.23. Both the mean and median values are negative in all four time periods tested.

Friedman Test Summary: CACLTA

N	41
Chi-Square	4,024
Df	3
Asymp. Sig.	0,259

Table 4.24 **S**ource: Researcher's own

In table 4.24, the p value of 0.259 is greater than p value of 0.05; therefore we accept the null hypothesis that there is no statistically significant difference in the values over the four time period. Therefore for the variable CACLTA there is no significant difference over time pre and post the distressed funding intervention.

The mean ranks values from -0.03 to -0.09, and median values from -0.12 to -0.77 which are fairly similar over the years further support the null hypothesis conclusion that there is no difference in variable over the four time periods.

5. Current Assets / Current Liabilities ("CACL") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
CACL_L2	41	1,12	0,776	2,78	0,946
CACL_L1	41	0,94	0,585	2,22	0,800
CACL_1	41	1,30	1,726	2,68	0,957
CACL_2	41	2,97	10,368	2,32	0,895

Table 4.25 **S**ource: Researcher's own

Table 4.25 presents the descriptive statistics for the variable CACL over the four time periods pre and post intervention. The sample size is 41 over all time periods, the mean, standard deviation, mean ranks and median are also presented over the different time periods. It is interesting to note that the mean values improve post the interventions to levels higher than those pre intervention.

FriedmanTest Summary: CACL

N	41
Chi-Square	5,517
Df	3
Asymp. Sig.	0,138

Table 4.26 **S**ource: Researcher's own

The results of the Friedman level indicated that there was no statistically significant difference in the values for CACL pre and post intervention. Despite the mean values increasing post the interventions, the mean ranks (which exclude the effect of outliers) ranged from 2.22 to 2.78 which are very close in value further supporting the statement that there was no difference in values over the four time periods. The median values from 0.80 to 0.95 were even closer to each other, further evidence in support of the null hypothesis.

6. Cash/ Current Liabilities ("CCL") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
CCL_L2	22	0,19	0,356	2,64	0,050
CCL_L1	22	0,08	0,093	2,09	0,055
CCL_1	22	0,19	0,263	2,95	0,044
CCL_2	22	0,71	2,083	2,32	0,040

Table 4.27: **S**ource: Researcher's own

The CCL variable descriptive statistics are presented in Table 4.27. The sample size was 22 and the mean, mean ranks, median were all positive in all four time periods measured.

FriedmanTest Summary: CCL

N	22
Chi-Square	5,618
Df	3
Asymp. Sig.	0,132

Table 4.28 **S**ource: Researcher's own

The Friedman test results concluded that there was no statistically significant difference in this variable over the four time periods, i.e. pre and post the intervention. The close range of the mean ranks and the median values presented in Table 4.28 further supports the hypothesis that there is no difference over the time periods.

7. Current Liabilities / Total Assets ("CLTA") Summary Statistics

	N	Mean	Std. Deviation	Mean Ranks	Median
CLTA_L2	41	0,43	0,182	2,15	0,403
CLTA_L1	41	0,56	0,495	2,73	0,444
CLTA_1	41	0,60	0,484	2,41	0,461
CLTA_2	41	0,71	0,875	2,71	0,456

Table 4.29 **S**ource: Researcher's own

The descriptive statistics for the variable CLTA are presented in Table 4.29. The sample size is 41 and the mean, standard deviation, mean ranks and median are also presented for all four time periods.

Friedman Test Summary: CLTA

N	41
Chi-Square	5.634
Df	3
Asymp. Sig.	0.131

Table 4.30 **S**ource: Researcher's own

With regards the Friedman test, the results indicated that there was no statistically difference in this variable across the four time periods. Inspection of the median values, which are all around the 0.4 mark, is further evidence that there was no difference across the four time period. The conclusion is also supported by the mean ranks values which are very close to each other (ranging from 2.15 to 2.73).

8. Total Liabilities / Total Equity ("TLTE") Summary Statistics

	N	Mean		Mean Ranks	Median
TLTE_L2	41	-13,00	77,745	2,34	1,693
TLTE_L1	41	14,48	112,914	2,56	2,212
TLTE_1	41	-15,04	93,488	2,34	-1,302
TLTE_2	41	-4,18	34,687	2,76	0,459

Table 4.31 **S**ource: Researcher's own

As is the case with all other variables, the descriptive statistics for TLTE are presented in table 4.31 for two years pre intervention and two years post interventions. The sample size tested was 41, the mean; standard deviation, mean ranks and median are also presented over the different time periods. An interesting observation in the mean values is that they seem to be deteriorating post the intervention, which was not expected.

Friedman Test Summary: TLTE

N	41
Chi-Square	2,941
Df	3
Asymp. Sig.	0,401

Table 4.32 **S**ource: Researcher's own

The p - value from the Friedman test for TLTE was 0.401 which is greater than 0.05, therefore we accept the null hypothesis that there is no statistically significant difference in the variables pre and post the intervention. Although the mean ranks appear to be at their highest two years post the intervention at 2.76, the range are close to each other supporting the finding that there is no significant difference over time.